

THE
RAILWAY GAZETTE

A Journal of Management, Engineering and Operation
INCORPORATING

Railway Engineer • TRANSPORT • The Railway News
The Railway Times • Herapath's Railway Journal • RAILWAY RECORD.
RAILWAYS • ESTABLISHED 1835 • RAILWAY OFFICIAL GAZETTE

PUBLISHED EVERY FRIDAY

AT
33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1Telegraphic Address: "TRALETTE PARL., LONDON"
Telephone No.: WHITEHALL 9233 (6 lines)

Annual subscription payable in advance and postage free:

British Isles and Abroad £2 5s. 0d.
Single Copies One Shilling

Registered at the General Post Office, London, as a Newspaper

VOL 70. NO. 15

FRIDAY, APRIL 14, 1939

CONTENTS

	PAGE
Editorials	601
Letters to the Editor	607
Publications Received	608
The Scrap Heap	609
Overseas Railway Affairs	610
A New Railway Carriage Fitting	614
Locomotive Tests on the L.M.S.R.	615
New G.S.R. 4-6-0 Locomotives	617
Scenes on the German State Railways	620
Railway News Section	623

DIESEL RAILWAY TRACTION

A Supplement illustrating and describing developments in Diesel Railway Traction is presented with every copy of this week's issue

Easter Holiday Traffic

THE railway companies can congratulate themselves on the results of their Easter holiday arrangements. Holidaymakers, regardless of crises, set off for country and seaside to revel in the finest Easter weather for 12 years. On the L.M.S.R. 35 additional trains ran from Euston and 13 from St. Pancras on the Thursday before the holiday. One feature of the company's programme was a special train to convey delegates from London to Llandudno for the congress of the National Union of Teachers. Thousands of Londoners flocked to Southend; during the afternoon and evening of Easter Monday 70 trains brought 80,000 passengers back home from that resort. The L.N.E.R. ran the Flying Scotsman in three parts on the Thursday, and one express was despatched in eight parts. Many day and half-day excursions were run, and the company's ships to Holland and Belgium were very well patronised. Hundreds of extra trains were provided on the Great Western Railway, and expresses were sent out in several parts. "Honeymoon" trains included the Cornish Riviera Limited, which ran in four parts, and the 12 noon Torbay express, which was triplicated. A special train was run from London suburban stations to South Wales to enable Welsh people employed in West London to spend Easter at home. A record number of 46,764 passengers was conveyed by the Southern Railway on the short sea routes to the Continent. Traffic to South Coast resorts was well up to the average.

The Week's Traffics

In the accompanying table the comparison is between a week this year which includes the long-distance bookings for the Easter holiday and an ordinary week in 1938. Passenger train takings are, therefore, substantially up, and merchandise are down, but coal is better except on the L.N.E.R. Comparing with Good Friday week in 1938 last week's passenger train receipts on the L.M.S.R. are down £18,000, on the L.N.E.R. they are up £6,000, on the Great Western they are up £7,000, and on the Southern they are down £4,000. Merchandise receipts on the L.M.S.R. show no change in comparison with Good Friday week in 1938, and on the Southern they are down £5,000, but increases of £23,000 and £15,000 respectively are shown by the L.N.E.R. and the Great Western. Coal receipts show increases of £35,000 on the L.M.S.R., of £2,000 on the L.N.E.R., of £10,000 on the Great Western, and of £1,000 on the Southern.

	14th Week				Year to date	
	Pass., &c.	Goods, &c.	Coal, &c.	Total	Inc. or Dec.	%
L.M.S.R. ..	+208,000	- 94,000	+ 14,000	+ 128,000	- 510,000	- 3.08
L.N.E.R. ..	+103,000	-55,000	- 32,000	+ 16,000	- 663,000	- 5.35
G.W.R. ..	+100,000	-27,000	+ 4,000	+ 77,000	- 188,000	- 2.74
S.R. ..	+134,000	-14,000	+ 1,000	+121,000	+ 42,000	+ 0.83

Total receipts of the four main-line companies for the past week were £3,342,000, an increase of £72,000 on those for Good Friday week, 1938.

* * * *

A Fixed Easter Would Be Bad

In many parts of the world there is a growing desire that the fall of Easter should be governed by a rule resulting in less fluctuation than the present system of relating phases of the moon to the calendar year. It will be recalled that the recommendation of the League of Nations was that Easter Sunday should be located "on the Sunday following the second Saturday in April," and, as a contributor to our columns about a year ago (April 1, 1938) pointed out, both Orthodox and Protestant church authorities have agreed to this. The Roman Catholic decision is not yet forthcoming, but, if the new Pope intends to express his view, the present year offers peculiar merits, for not only did Easter Sunday fall on the recommended day but Good Friday was actually on its historic anniversary, April 7—the only date in the life of Christ that is generally accepted. Advocates of a fixed Easter claim for it the benefits of more convenient holidays, constant school and college terms, equal periods for holiday savings and expenditure, and so forth. Should no steps to this end be taken during the present year, Good Friday in 1940 will fall on its earliest possible date under the present system, namely, March 22. Our own views are very much against a fixed Easter. Already life is monotonous enough and it would make it even more so; as would also the four-week month and thirteen-month year; which incidentally would bring ruin to the calendar and diary industry. Another and more important factor from the railway point of view is that, arranged as it is, contingent upon the phases of the moon, good weather is more often experienced than bad at the Easter holiday period. We have had a wonderful example this year of good weather. Meteorological records over a long period show that if we had a fixed Easter the chances of bad weather over the holiday period would be greatly increased.

* * * *

Dissolution of London Transport Constituents

The London Passenger Transport Act of April 13, 1933, which incorporated the London Passenger Transport Board, made provision, *inter alia*, for the dissolution of

the Underground group of companies, and of the Metropolitan Railway, when the distribution of Transport stock as consideration for the transfer of their undertakings was completed. Paragraph 10 of the fifth schedule of that Act stated that, when in the case of any statutory company to which the schedule related, the distribution of stock or money had been completed in accordance with the provisions of that schedule, the company might apply to the Board of Trade, which department, if satisfied that the conditions had been complied with, should give a certificate to that effect. Moreover, it was provided that, upon the publication of this in *The London Gazette* the company should be dissolved. These formalities have now been completed in respect of the Metropolitan Railway Company, the Central London Railway Company, the City & South London Railway Company, the Lots Road Power House Joint Committee, the London Electric Railway Company, and the Metropolitan District Railway Company. In all cases the certificates are dated February 28, 1939, and appear over the signature of the Rt. Hon. Oliver Stanley, President of the Board of Trade. They were published in *The London Gazette* of March 10, so presumably that is the actual date of dissolution of the companies in question.

* * * *

Overseas Railway Traffics

With the exception of the Buenos Ayres Great Southern the principal Argentine railways have continued to reduce their previous decreases. During the past three weeks the Central Argentine has improved its traffic position to the extent of £75,293, the Buenos Ayres & Pacific by £35,049, and the Buenos Ayres Western by £27,234. In the same period, however, the Canadian Pacific has increased its decrease by £800 net. The Bombay, Baroda & Central India ends its financial year with a decrease of £131,700.

	No. of Weekly Week Traffics	Inc. or Decrease £	Aggregate Traffic £	Inc. or Decrease £
Buenos Ayres & Pacific ..	41st	115,074	+ 13,771	3,540,078 — 63,462
Buenos Ayres Great Southern ..	41st	149,442	— 11,166	5,869,478 — 327,977
Buenos Ayres Western ..	41st	49,504	+ 4,715	1,826,365 — 34,429
Central Argentine ..	41st	120,751	+ 12,786	4,770,360 — 240,081
Canadian Pacific ..	13th	698,800	+ 29,000	5,869,200 — 164,000
Bombay, Baroda & Central India	52nd	284,625	— 24,750	8,846,475 — 131,700

The Great Western of Brazil shows an increase of £34,700 for the fourteen weeks of the current year.

* * * *

The War in Spain Ended

The entry of the Nationalist forces into Madrid on March 28 initiated the general surrender of the Republican forces, and public services throughout the south of Spain were soon under Nationalist control. Valencia, Alicante, and Almeria were occupied by March 30, and the inland towns soon after. In Madrid the Metro Underground railway, which, except for occasional interruptions on the Northern, or Cuatro Caminos, Section, has continued to give a limited service throughout the war period, was soon running a full service; indeed, it is said that a number of the Nationalist officers and troops made use of the Metro trains to gain the centre of the city, and that the señoritas in charge of the booking offices insisted on their booking tickets for the journey. As regards main-line train services, there was found to be less damage to track and bridges than in the case of the approach to Barcelona. Internal dissensions and the sudden final collapse of the Republican army no doubt explain this. As it was, many important buildings, including the principal railway stations, were found to have been mined, while on the Madrid—Guadalajara section of the Madrid Zaragoza Company's railway no fewer than 95 mines had been placed

ready to be exploded. Through railway communications are rapidly being re-established. On April 1 through services began to operate between Barcelona and San Sebastian and Bilbao. The Zaragoza—Madrid line had been cleared, and the first train entered the Atocha station from Zaragoza on April 1, with 70 wagons of foodstuffs.

* * * *

Permanent Way Metallurgy

On all hands there are indications that the application of metallurgical research to railway materials is being pursued with increasing insistence and fruitful results, and the comprehensive lecture on this subject given on April 5 to the London Section of the Permanent Way Institution by Mr. T. H. Turner, Chief Chemist and Metallurgist to the L.N.E.R., reported on page 626 of this issue, well illustrated the wide field that the track offers to the metallurgist's inquiring mind. Pre-eminent in this field, of course, is the steel rail—the largest individual purchase of stores figuring in the annual accounts of a railway company. Mr. Turner gave it as his opinion that the ideal rail of the future is one of medium-manganese medium-carbon composition that has been subjected to heat treatment, and in view of the possibilities in this direction he regarded the use of such alloys as chromium unnecessary. He strongly advocated the welding of rails into the longest practical lengths, as at least a partial solution of rail-joint troubles, and preferably, in his opinion, by the electric flash-butt method. The ravages of corrosion on track materials occupied a considerable part of the lecture, and emphasis was laid on the importance of zinc coatings for fastening and even for fishplates if practicable, and of regular painting with red lead of rails for tunnels, structures, and signal and other wire, for the prevention of corrosion. An interesting suggestion was that a joint permanent way materials laboratory and information bureau might with advantage be set up by the four main-line railway companies and the L.P.T.B. for joint research on permanent way.

* * * *

The Cost of Rail Improvement

In the paper to which reference has just been made, the author expressed the hope that the powerful combination of firms engaged in making steel rails in this country would give to the railways the best and longest-wearing rails without "progress-killing supplementary charges." It was pointed out in the subsequent discussion, however, that steel manufacture is no more a work of philanthropy than is the running of a railway. The speaker, who defended the manufacturers, pointed out that the narrow limitations of present-day specifications and various other obstacles would in any event prevent the restoration of the conditions that gave the early steel rails their hard-wearing characteristics, but that the problem of improving the rail to meet the greatly intensified wear conditions of the present day had been approached in other ways. One was the change from a high-carbon to a medium-carbon medium-manganese composition, which had considerably improved resistance to wear; and although in raw materials the changed composition had increased the cost of production, the concession by the L.N.E.R., which was the first British railway to take this quality in 1930, of relaxed sulphur and phosphorus limits, had provided a *quid pro quo* whereby makers and users had both benefited. This was an improvement in the rail which had been brought about without any "progress-killing supplementary charge," and indicated a line of compromise along which further improvement might be sought in future. Controlled cooling of rails was another

substantial improvement that had been conceded by the makers without any increased cost to the users.

* * * * *

"Put Your Factory in the West"

Economic considerations that used to guide the location of factories have ceased to be the only ones for industrialists to study. The possibility of war is causing a search for sites outside the so-called danger zones, and figures published by the Great Western Railway of factories established in its area show a considerable "drive to the West" on the part of manufacturing firms. Out of 73 factories lately established in G.W.R. territory, 37 have been located in South Wales. International tension has not yet completely qualified for the definition of an "ill wind," as large numbers of persons are undoubtedly "blown good" by this westwards tendency for which it is responsible. The greater part of Glamorgan-shire and parts of neighbouring counties are scheduled as "special areas," so that, not only may new industries in certain conditions qualify for Government assistance, but also the nation derives benefit from the creation of employment where its effect is most needed. This movement has the support and assistance of the Great Western Railway, which has adopted the apposite slogan, "Put your factory in the West." The company is equipped to furnish information and assistance to those seeking new sites, and will conduct preliminary investigations in its own name on behalf of enquirers.

* * * * *

Thirtieth Anniversary of the P.L.A.

The Port of London Authority has just completed thirty years of active life, for March 31, 1909, was the "appointed day" on which the authority came into being under an Act of 1908. Two of the original members are still serving on the board, namely, Lord Ritchie of Dundee, the present Chairman, and Sir Ion Hamilton Benn, Chairman of the Law & Parliamentary Committee. It will be remembered that the authority was constituted to bring the old docks hitherto under the management of a number of dock companies, and the tidal portion of the River Thames (formerly under the jurisdiction of the Thames Conservancy), up to modern standards, which was considered impossible under the conflicting interests then existing. Since its inception the authority has carried out vast improvements in the Port of London by way of enclosed dock accommodation, the provision of modern equipment, and the widening and deepening of the river channels. During the past thirty years, for example, £3,200,000 have been spent on dredging some 52,700,000 tons of material, making possible the approach of vessels drawing up to about 37 ft., whereas in 1909 the draft of the largest vessel that then used the port was 27 ft. The total expenditure involved on works completed during the past thirty years amounts to £20,000,000. Among a number of comparative statistics issued by the P.L.A. in connection with its thirtieth anniversary, we notice with interest that the length of dock railways has increased from 134 miles in 1909 to 157 miles at the present time.

* * * * *

A New Irish 4-6-0

An excellent example of three-cylinder 4-6-0 type locomotive design has just been completed at the works of the Great Southern Railways at Inchicore, Dublin. The engine is the first of a new series to be known as the "800" class, introduced for working express passenger trains between Dublin and Cork. The illustrated description appearing on pages 617-619 of this issue provides a means of gauging the general characteristics of the new

locomotives both in respect of appearance and, what is of more importance, the layout of the detailed parts and their assembly. The cylinders are of generous proportions for a three-cylinder engine of this kind and their output is well balanced by the provision of 63 tons of adhesion, or 21 tons per coupled axle; this is in relation to a total weight for the engine alone, in working order, of 84 tons. The front end arrangements appear to us to be admirable and, as readers will see from the sectional elevation drawing on page 618, the steam and exhaust piping is laid out to advantage in as direct a manner as possible, avoiding sharp bends or other impediments to the free passage of boiler and exhaust steam. The provision of roller-bearing axleboxes for the engine bogie and tender wheels, and ball and needle roller bearings for the valve motion, is another feature worthy of note in this excellent all-round design.

* * * * *

Passenger Flights Across Canada

A passenger air service across the Dominion of Canada was inaugurated by Trans-Canada Air Lines on April 1, over the 2,688-mile route from Montreal to Ottawa, Toronto, North Bay, Winnipeg, Regina, Lethbridge, and Vancouver. The journey is made in 17 hr., calling at the places named. This route will link up with the Imperial Airways planes which will fly the Atlantic from Foynes, Ireland, to Montreal, in some 20 hr. this summer. The Dominion now has first-class air facilities for the transport, within the space of one day, of mail, express cargo, and passengers from one side of Canada to the other. Trans-Canada Air Lines has developed steadily under the control of the Canadian National Railways, to which the Canadian Government entrusted the responsibility of organising the air service. Air mail schedules by day across the Rocky Mountains began last October, and were extended to Eastern Canada in December. On March 1 of this year an overnight air mail service was inaugurated right across the Dominion, allowing the mail from Montreal to be delivered in Vancouver next day, and *vice versa*. Fares on the new air route are on a basis of approximately 3d. a mile, with a 10 per cent. reduction for return tickets. When refreshments or meals are served aloft, no additional charge is made.

* * * * *

Radio Service for Channel Islands Steamers

New Marconi transmitting and receiving equipment is shortly to be installed in the radio stations maintained by the G.W.R. and Southern Railways at Jersey and Guernsey for communication with the Channel Islands steamers. These stations are the outcome of a process of development in communication facilities that dates from the installation of radio apparatus on the G.W.R. steamers over twenty-five years ago. At first, it is related in an article in the *Great Western Railway Magazine*, messages between the Islands and steamers on voyage had to be cabled to or from the Post Office radio station at Niton, Isle of Wight, and radiated from there. To avoid delays caused by congestion of the cable link, the G.W.R. and Southern Railway together applied in 1928 for a licence to establish their own transmitting and receiving stations on the islands. At first a licence for receiving equipment only was granted, but the value of being able to intercept messages from the ships without waiting for them to be cabled from Niton was such that the Guernsey and Jersey State authorities themselves agreed to instal and maintain the receivers in the railway companies' joint offices on the islands. Subsequently permission to transmit also was granted, with the result that the railways now have their own 25-watt stations in Jersey and Guernsey.

"Common Employment"

CONSIDERABLE interest has been aroused by the judgment, involving the doctrine of common employment, which was recently delivered by the House of Lords* upon an appeal whether Ribble Motor Services Limited was liable for the death of one of its drivers. The appeal was against a judgment of the Court of Appeal reversing an award made by Mr. Justice Hawke at Liverpool Assizes to the widow of E. C. Radcliffe, who had been employed as a motorcoach driver. On June 25, 1936, when the fatal accident occurred, Radcliffe was returning with an empty coach to his employer's garage in Bootle. He pulled up in a Liverpool street, and while standing by his coach was crushed by another coach, also owned by his employer and also returning to the Bootle garage. Mr. Justice Hawke found that the doctrine of common employment did not preclude the widow of the deceased driver from recovering damages, but, while the Court of Appeal held that the doctrine did apply, the House of Lords took the contrary view and allowed the appeal. After a review of the facts and circumstances, Lord Atkin said that the legal issue was whether the employer was protected from any claim by the doctrine of common employment. At present this doctrine was looked at askance by judges and textbook writers, but it was too well established to be overthrown by judicial decision. It had been affirmed by several decisions of that House, and had been accepted by the Legislature once expressly in the Employers' Liability Act, 1880, and subsequently as the foundation underlying the various Workmen's Compensation Acts. They must, therefore, deal with the case on the footing that there were conditions in which the law would not hold a master liable for injuries caused to a workman by the negligence of his fellow workman employed by the same master and engaged in a common employment with him.

In this case, said Lord Atkin, the two drivers were proceeding independently through the Liverpool streets to the same destination. In the course of their employment they would meet in the same garage, and while there would be dependent upon the skill with which each drove his vehicle. But in regard to driving in the streets of Liverpool, the one was no more interested in the skill of the other than in that of the drivers of the myriads of other vehicles in whose vicinity he might happen to drive. In other words, for the purpose of this doctrine, the risk of injury in the streets by a vehicle driven by a fellow servant was not one of the natural risks and perils incidental to the performance of his service. If the doctrine applied here, Lord Atkin did not see why it should not apply to the case of drivers of cars let out on hire from different garages in different towns, or why the driver of a lorry stationed at Portsmouth should not be deemed to have contracted to bear the risk of injury from another lorry driven by a driver stationed at Newcastle who might happen to meet on the same road in the Midlands. If that were so, it would be implied contract run riot. Judgments were delivered by Lord Macmillan and Lord Wright agreeing with Lord Atkin.

These judgments are of great importance, extending far beyond the parties concerned in the particular case, for the doctrine of common employment has been pleaded in numerous actions. Indeed, it is easy to see how the Law Lords' observations and illustrations affecting motor drivers may be held to apply to different grades of railway servants. We recall the introduction of the doctrine during an action arising from an accident which occurred on July 2, 1937, when a tramcar belonging to the London

Passenger Transport Board and driven by one of its servants, collided with a stationary bus also belonging to the board, and one of the board's conductors received serious injuries. It had been conceded that while the buses and tramcars belonging to the board were in their garage all the servants of the board attending to those vehicles were in common employment, so that no action could be maintained in respect of an injury caused to any one of them at the garage by the negligence of the other. It had, however, been argued that, so soon as a tramcar or a bus emerged from its garage into the public street it became an independent unit and its driver or conductor was not in common employment with the driver or conductor of any other vehicle belonging to the board. Mr. Justice Macnaghten, in giving judgment in the High Court, said he was bound by the decision of the Court of Appeal in *Radcliffe v. Ribble Motor Services Limited* to reject that argument. The doctrine of common employment rested on the assumption that a servant undertook as between himself and his master to run all the ordinary risks of his service, including the risk of negligence on the part of a fellow workman, and all the authorities to which reference had been made confirmed the view that all the servants of a road transport company must be in common employment when engaged on the company's business or on the public roads. The action was dismissed and judgment for the London Passenger Transport Board was entered accordingly. The House of Lords judgment in the *Radcliffe* case now renders it essential to consider with more than usual care whether or not a plea may properly be entered in accident claims that the doctrine of common employment applies. Lord Atkin said that the doctrine was too well established to be overthrown by judicial decision, but his judgment would seem to impose certain definite limitations and to alter something of a principle, or, at any rate, a belief, which has endured for very many years. It is certain that some legal textbooks will now have to be revised, and it is, perhaps, not too much to say that the judgment will have far-reaching effects upon accident claims in the realm of transport generally, while it will doubtless be examined among the other kindred questions of workmen's compensation which are to be the subject of a report by the Royal Commission appointed last December under the chairmanship of Sir H. J. Hetherington.

* * * *

Railhead Distribution

ONE of the important facilities introduced by the British railway companies in recent years for the benefit of manufacturers is the railhead distribution scheme. Under this scheme producers can dispatch goods in bulk by express freight trains to convenient railhead centres situated at places where they have an appreciable number of customers within a radius of twenty to thirty miles. Upon arrival, the traffic is sorted as may be necessary and distributed in detail by a fleet of specially allocated motor vehicles, thus assuring retailers in remote districts prompt deliveries of essential commodities. The usefulness of this arrangement can be appreciated by the fact that at Newcastle-on-Tyne, for example, supplies are regularly distributed to nearly 300 towns and villages within a radius of twenty miles. In addition to the actual distribution of the traffic, the companies undertake the collection and return of empties and the issue of the appropriate credit notes. Should traders so desire, storage accommodation may be rented at reasonable rates at the railhead centres and deliveries can then be effected by the railway com-

* See THE RAILWAY GAZETTE for March 31 last, page 560

panies from stocks against orders received direct from the firm's customers.

Where such stocks are maintained, the companies are willing to provide staff at a very moderate cost for the purpose of acting as warehousemen, stock-keepers, and so forth. These men perform all the work incidental to this service, such as sorting, weighing and sampling, labelling, and decanting in the case of liquids. They will also maintain a complete record of the business transacted on the firm's own stock sheets, which are forwarded for inspection as often as may be desired. By the adoption of these arrangements producers secure the benefit of the lower packing and conveyance charges which are generally associated with the conveyance of goods in bulk quantities and also obtain, in effect, the advantage of branch sales depots at a low cost. A further feature of the scheme is that where a firm's railhead delivery traffic is sufficient to justify the full-time employment of cartage vehicles, arrangements are sometimes made for the vehicles to be painted in the firm's own colours, with their trade name, and for the drivers to wear the firm's livery. The adoption of this practice enables traders to secure the dual advantages of useful publicity and prompt service.

While railhead distribution is more suitable for districts with a fairly dense population, the transport requirements of the more sparsely populated areas are being developed steadily by the railway country lorry services. *Prima facie*, the scope for such services in a country like Great Britain would appear to be extremely limited but, in fact, they have proved so useful for the collection and delivery of traffic to outlying villages, hamlets, and farms that they are now operated from over 2,820 stations. In a number of cases these services cover a distance of twenty miles from the railway stations and regularly convey such traffic as roadstone and road-making materials, grain and flour, and timber from country estates. Specially-fitted motor vehicles are used for the regular collection of milk and livestock. In some instances specially adapted motor lorries are provided to deal with the varied descriptions of agricultural traffic, while special equipment is available to meet particular needs, such as hay ladders in connection with the cartage of hay and straw. During harvest time and other busy periods of the year when farm equipment is fully occupied, railway lorries are available for use by farmers for the conveyance of freight and all descriptions of traffic for long or short distances covering road only or road and rail journeys. The steadily increasing tonnage of traffic which is being dealt with on these services is a clear indication of the manner in which they have met a need and are assisting the development of trade.

* * * *

Do You Commute?

THE inquirer was an uncle from America, and the present writer was momentarily tongue-tied before he realised that the question meant "Do you travel with a season?" There is not really such a great gap between the American commuter and the English citizen of Suburbia, apart from the fact that the former travels to and from his work in a "day coach"—like a giant tram—and the latter usually sits in knee-locked intimacy with his fellows in what travelling Americans sometimes call an English pill-box. Under the auspices of Simon and Schuster (New York), Mr. Edward Streeter has written and Mr. Gluyas Williams has illustrated a new and original travel book: "Daily—Except Sundays, or What Every Commuter Should Know." We would suggest that every commuter knows it already, but until he has spent \$1.25 on this charming book and gone carefully through it, he will not

realise what a vast storehouse of knowledge his travels between office and dormitory have given him. Mr. Streeter has travelled 216,000 miles without getting anywhere. He is a commuter, like so many of us. You can travel many times round the world on the Long Island Local, just as you can on the inner part of the Southern Electric. We meet many old friends among these American commuters. There is the man who pinions your arm as he opens his newspaper; there is the indefatigable conversationalist; there are the children, being taken up to town on a Saturday morning. "You will be an immediate favourite with the children who know they won't get quite as much hell with a stranger around. If there are three of them, two will occupy the seat with you by popular vote. The youngest will sit with its mother, so that it can put its white shoes on your lap." There are the same old localities, made picturesque by the glitter of abandoned tin cans, in which electric trains usually choose to break down.

Some people and things are at once like and unlike. Probably every country where there are railways has its particular variety of train drunk. The English drunk, on a train, tries to organise community singing. The Scotch drunk obliges the carriage with a long and lugubrious recitation, which he tries to deliver while standing, and ends by putting his elbow through the window. After which the long-suffering passengers instantly befriend him, and assure the visiting inspector that it was an accident due purely to the irregular motion of the train. As for the American reveller: "With a fixed, glassy stare he creeps towards you. On the way he makes running comments about your hat, your glasses, and the shape of your nose. . . . With his arms around your neck he lies affectionately on your shoulder until the next curve, when he rolls into your lap. Through it all you must not show annoyance. It is very un-American to be cross with a train drunk." In England and America respectively, there are of course slight differences in the amenities of trains. The English season-holder knows nothing of the experience of having his hat pushed over his eyes by the paper of the man in the seat behind; the American commuter is unaccustomed to the English luxury of rack-hanging. But they both pitch to their wives the same engaging stories of how they were detained and had to take a later train.

* * * *

Striking Locomotive Results in America

REMARKABLE operating results have been obtained with 20 new 4-8-4 locomotives placed in service in the latter part of 1937 on the Union Pacific Railroad. These engines were designed for working passenger and freight trains, and during the twelve months ended December 31, 1938, they covered 3,597,945 miles in heavy fast passenger service calling for speeds frequently above 80 m.p.h., or practically 15,000 miles a month for each locomotive. They showed an availability for service of 93.4 per cent. and effected a saving in maintenance costs, as compared with the earlier 4-8-2 type engines built in 1922, of 8.37 cents (4.14d.) a mile, or an aggregate of 301,148 dollars (£62,000) per annum. Owing to increased capacity and the ability to handle trains comprised of from 20 to 22 passenger vehicles there was a saving of 1,249,030 train miles, or approximately 1,500,000 dollars (£258,000) for the year. Allowing for fixed charges, including depreciation, interest on capital, and taxes, together with maintenance costs, the net annual saving on the 20 locomotives represented a return of just over 50 per cent. on their cost.

Availability figures for the new 4-8-4 locomotives as

compared with the 4-8-2s show a substantially decreased time required for running, drop-pit and shop repairs, and an increase in availability rising from 65.3 per cent. for the old to 93.4 per cent. for the new engines. Comparative tests show that the cost of fuel increased from 17.493 cents (8.65d.) to 20.102 cents (9.94d.) per locomotive mile for the new engines, accounted for by the substantially higher speeds and heavier train loads handled. The new locomotives showed important economies in repair costs, and accumulated sufficient mileage in 1938 so that all received classified general repairs. During 1938 the average cost of running repairs for the 4-8-4 locomotives was 9.93 cents (4.91d.) and shop repairs 3.20 cents (1.58d.), or a total of 13.13 cents (6.49d.) a mile, which may be compared with 14.19 cents (7.02d.) and 7.31 cents (3.62d.), or a total of 21.50 cents (10.64d.) a mile for the earlier 4-8-2 class of locomotives. The new 4-8-4s are designed throughout for a maximum operating speed of 90 m.p.h., and on test have run satisfactorily at speeds in excess of 100 m.p.h. The engines were designed by the Union Pacific engineers in collaboration with the American Locomotive Co. as builders. Each engine develops a tractive force at starting of 63,600 lb.

* * * *

600-Ton Express Trains

IN the realm of possible operating economies on British railways, the latest types of express passenger locomotive seem destined, on the basis of some of their recent exploits, to play a considerable part. In our February 10 issue a description was given of a remarkable run with one of the streamlined "A4" Pacific locomotives of the L.N.E.R., in which the mile-a-minute timings of the Flying Scotsman were slightly improved on over the entire 268½ miles from King's Cross to Newcastle, despite a load of 635 tons behind the tender. This was on an ordinary run, and without any of the incentive of special test conditions. As set out on p. 615 of this issue, the L.M.S.R. recently carried out tests behind one of its latest non-streamlined "Coronation" class Pacifics, with a twenty-coach load of 604 tons tare and probably 610 tons gross, and some of the results have been even more noteworthy. The tests were made to the schedule times of the Royal Scot, when it is running on its summer allowance of 7 hr. for the 401.4 miles from Euston to Glasgow; and it will be recalled that in the course of this journey the train has to surmount in succession the summits of Shap and Beattock, respectively 915 and 1,015 ft. above the sea. To obtain conditions of maximum severity, therefore, the test train was worked in one day from Crewe to Glasgow and back on these timings, which meant that in this 487-mile round the 610-ton load had to be lifted four times in succession from only a few feet above sea level to the altitudes mentioned.

Just prior to the test described the engine had been fitted with a double blastpipe and chimney, as illustrated in THE RAILWAY GAZETTE of March 31 (page 543). In consideration of the load, some of the uphill speeds established new records for Great Britain, and these are reflected in the unprecedented power output, reaching a maximum of 2,511 drawbar horsepower. From Carnforth, practically at sea-level, the train was worked to Shap summit at an average of 56.5 m.p.h., 5½ min. being gained on schedule on this stretch alone; altogether there was a net gain of 10 min. on Royal Scot point-to-point times from Crewe to Glasgow. A most remarkable effort was made after the 2 hr. allowed for turning round at Glasgow; a speed averaging 45 m.p.h. was maintained up 10 miles of grades of 1 in 98 to 140 from Motherwell past Law junction; up the rising grades of the Clyde

valley from Lamington onwards speed was continually at between 62 and 68 m.p.h.; and the last 2 miles at 1 in 99 to Beattock summit, after the engine had been climbing for over 50 miles from a start almost at sea level, reduced the speed only from 68 to 63 m.p.h., the drawbar h.p. here rising to 2,280, and the indicated horsepower to over 3,300. This was done, moreover, on no greater cut-off than 35 per cent. The fact that the 610-ton train was worked from Glasgow to Carlisle in only 1½ minutes over the allowance of the Coronation Scot streamliner, which carries less than half this load, tells its own tale. Further, even the Royal Scot has hitherto been limited in weight to a total tare of 420 tons, and as on this test 9 to 10 min. were gained in both directions with an addition of 44 per cent. to that tonnage, some indication is given as to what might be done in the combination of trains at present running in duplicate over long distances; such combination could apparently be effected, even including additional stops, without increase of overall journey time. An examination of the figures given in our article will reveal the fact that the performance of the locomotive throughout was of a high order, and in the most arduous conditions of the test the moderate figure of 3.12 lb. of coal per d.b.h.p. hr. strikes us as a tribute to the design of the locomotive. Even if no data are available to compare the efficiency of the locomotive before and after fitting a double blastpipe and chimney, this figure alone, taken in conjunction with the almost phenomenal performance of the locomotive in hauling this 600-ton train, tends to confirm the benefit of such equipment.

* * * *

Canadian Pacific Railway Company

BOTH from its railway operations and from "other income" this company's takings in 1938 were lower than in 1937. Gross earnings from railway operations were down \$2,826,577 or 1.9 per cent., and working expenses advanced by \$163,204 or 0.1 per cent., leaving net earnings \$2,989,781 lower. Other income, after provision for hotel and steamship depreciation, amounted to \$7,363,673, a decrease of \$4,266,038. In the fixed charges of \$24,767,939 there was an increase of \$726,405. The two principal contributory items were \$206,924 interest on equipment obligations for the purchase price of new rolling stock and \$368,172 interest on secured notes issued for the acquisition of certain notes of the Soo Line. Provision was also made out of income for \$2,085,817 for interest on Soo bonds, &c. Earnings for the year were sufficient to meet all expenses and fixed charges, including provisions for depreciation and taxes, with a surplus of \$1,262,382, but, as already announced, the directors decided not to make any distribution for 1938 on the four per cent. preference stock, which for 1937 received 2 per cent.

Passenger earnings were \$511,638, or 3.1 per cent., less than in 1937. Mild weather conditions favoured highway competition, and tourist business declined owing to the trade recession. Freight earnings decreased \$717,089 or 0.6 per cent. In the first part of the year traffic was seriously affected by the crop failure of 1937. The wheat yield in 1938 was the highest since 1932, and owing to the Government guaranteed price of 80 cents a bushel for No. 1 northern wheat f.o.b. Fort William, wheat was marketed freely. Handlings of all grain for the year amounted to 165,000,000 bushels, as compared with 94,000,000 in 1937. The improvement in grain traffic resulted in an increase of \$9,302,490 in rail earnings from grain and grain products. Notwithstanding the larger crop, the purchasing power of Western Canada did not

materially change owing to the drastic decline in prices of grain as compared with 1937, and, therefore, the increased return traffic which usually results from a large crop did not materialise. The movement of all other classes of freight with the exception of ores and concentrates and petroleum and its products was adversely affected by the general recession in industrial activity and the contraction in international trade. Some railway operating figures are compared in the accompanying table:—

	1937	1938
Miles open	17,186	17,256
Train-miles	37,694,030	36,918,187
Passengers	7,820,721	7,454,249
Tons, revenue freight	29,842,861	30,471,115
Average haul, miles	388.78	398.24
Operating ratio, per cent. (including taxes)	83.64	85.41
	\$	\$
Freight earnings	111,044,598	110,327,509
Passenger earnings	16,633,040	16,121,402
Gross earnings	145,085,558	142,258,981
Working expenses	121,343,311	121,506,515
Net earnings	23,742,247	20,752,466
Net income	35,371,958	28,116,139

The progressive restoration of basic rates of pay was

completed on April 1, 1938, and involved an increase of \$4,526,000 in expenses. Increases also resulted from higher prices for coal and other materials and heavier tax disbursements. These increases were almost offset by the smaller volume of traffic, temporary layoffs of station, shop, and clerical staff, and other economies. Senior officers were subject to 5 per cent. deduction from basic rates, the directors and members of the Executive Committee 10 per cent., and the Chairman and President 25 per cent. Under "other income" there was a decrease of \$1,667,650 in dividend income, and net earnings from ocean and coastal steamships, after deducting \$3,781,990 credited to depreciation reserve, were \$591,071, a decline of \$1,867,760. There was a sharp decrease in passenger earnings on the Atlantic, due to adverse economic conditions in North America, the absence of the Coronation traffic of 1937, and to a fall in cruise earnings. Net earnings from hotels were \$271,926 less. A joint committee has been established, consisting of three vice-presidents of this company and three vice-presidents of the Canadian National, to ensure that every effort to expedite and widen the application of co-operative measures would be made.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

"Northampton Vindicated"

185, Brighton Road,
Alvaston, near Derby

April 4

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The following amusing skit on railways appeared in the *Northampton Mercury*, November 10, 1838. Paragraph 9 is not without its significance in connection with the "Northampton Vindicated" controversy, as showing the attitude to the London & Birmingham Railway in the 1830's. It will be noticed that opposition is credited to the inhabitants of Northamptonshire and not specifically to those of the town of Northampton.

"We beg to recommend to the consideration of those who may be engaged in drawing up the Anti Railway Petition, the following cogent reasons for the immediate abolition of all railways, and the London & Birmingham in particular.

(1)—That it has thrown out of employ many bargemen, cads, hostlers, and stable boys of high character and high moral worth, who by reason of the extreme delicacy of their usual occupations, may find a difficulty in turning their hand to anything more laborious than picking pockets or executing the thimble-rig.

(2)—That her Majesty's subjects, instead of suffering with Spartan-like heroism the excruciating tortures of a stage-coach, are now compelled to sit with comparative luxurious ease and comfort; by which means the hitherto bold and hardy Britons run a risk of dwindling into the effeminate and feather-bed milksop.

(3)—That the policemen in the employ of this company are of such respectable appearance as to unsettle the minds of many cooks and housemaids living near the line; a circumstance which may cause a lamentable increase of 'sweet-hearting,' leading to imprudent marriages, and the consequent increase of population in this already over-peopled country.

(4)—That railways may occasionally be some slight inconvenience to fox-hunters, whose interests should be watched with the tenderest solicitude.

(5)—That the shareholders are now expected to receive an annual dividend of eight or nine per cent. as the reward of their spirit and enterprise; an anticipation which has a bad tendency towards engendering envy, jealousy, and many other bitter feelings in the breasts of those who have from the very first foreseen and foretold the complete failure of the undertaking.

(6)—That since the opening of the line, no less than two band-boxes have been materially damaged, and three or four small people lost all their temper.

(7)—That many country gentlemen of good repute and

tender consciences, have, in an unguarded moment, been seduced by a love of filthy lucre, to ask and accept about eight times the value of their land; a proceeding which has ruined their peace of mind to a degree which makes them anxious to take back their acres and restore such ill-gotten wealth.

(8)—That the company having insisted on paying their own servants, take it out of the power of a free-born Englishman to display that generosity which was wont to keep up such a kindly feeling between coachmen, guards, and porters on the one hand, and passengers on the other.

(9)—That the inhabitants of Northamptonshire having opposed, by every means in their power, the designs of the London & Birmingham Railway Company, feel themselves extremely ill-used at only having six stations, either in or on the very borders of their county.

In addition to which, we would recommend to the above mentioned concocters of this petition by no means the old but highly sensible and delectable remark, that 10 miles an hour is quite fast enough."

Yours faithfully,

A. B. LONGBOTTOM

Northampton's First Railway

London, E.C.3, April 4

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I have read with interest Mr. Kenneth Brown's article in your issue of March 24 on the railway from the Grand Junction Canal at Gayton to the town of Northampton, but there are one or two points on which I would like to join issue with him. He quotes the original Grand Junction Act of 1793, which empowered the company to make a collateral cut to the town of Northampton, and seems to draw the conclusion that the company was bound to make this a *navigable* branch. This was not in fact the case, as a further section in the Act provided, *inter alia*, that if the company thought it necessary or expedient that "boats, barges or other vessels, waggons or other carriages . . . should be conveyed along the intended line of the Canal and collateral cuts by Rail Ways or in any other manner than by water, it should be lawful for them to make such works, and the same when made should be taken and considered as part of the Canal or collateral cuts in the like manner as if they had been made navigable." The Act of 1803, therefore, does not vary or add anything to the original powers of the company.

That the canal company had intended to make this branch to Northampton by means of a railway before the passing of the 1803 Act, is evidenced by a report which was made to

the company in November, 1799, which pointed out certain advantages of railways where the nature of the ground "affords a gentle declivity for the bulk of the route as would be the case between the Canal and Northampton, for in such circumstances," the report continues, "two horses with a boy to drive them will convey a burthen equal to the full cargo of a boat at double the speed." The Burgesses of Northampton, although they may for various reasons have preferred a navigable cut, could not have called in question the company's right to construct a railway in its stead.

Regarding your contributor's claim to have discovered a new word in "Railway-Road," I have not been able to

confirm this, as the original copies of the Act, printed at the time of its passing into law, do not contain the all-important hyphen, but print two separate words. The report on the general condition of the undertaking made by Thomas Telford in 1805 refers to the line either as a Rail Way or a Rail Road, but does not use the hyphenated form. Although in early references to this method of transport many variations of name are found, I have yet to encounter the term which your contributor claims to have discovered, and it seems that the Oxford Dictionary may have to be exonerated after all.

Yours faithfully,

ARTHUR J. BRAWN

PUBLICATIONS RECEIVED

Haste, Post, Haste! Postmen and Post-Roads through the Ages. By George Walker. London: George G. Harrap & Co. Ltd., 182, High Holborn, W.C.1. 9 in. x 5½ in. x 1¼ in. 274 pp. Fully illustrated. Price 10s. 6d. net.—Regular transport services are so closely linked with the carriage of mail that the story of the post through the ages is of particular interest to those engaged in any of the great land transport services. In this volume the author has given in pleasant narrative form an account of the development of mail carrying from the days of the Assyrian runner to those of the aeroplane. Mr. Walker is a Congregational minister of Croydon, who lived for 18 years in South Africa. His study of transport as revealed in this book provides another example of that interest so often shown by ministers of religion in railways and transport generally—conceivably a survival of the days when the parish priest was the source of learning and information in his little community. In "Haste, Post, Haste!" he has done his work well, for, while disclaiming to be a serious historian (and thanking such for their work) Mr. Walker has revealed himself as far more than a mere copyist with a facility for popular writing. The bibliography to which he directs attention as serving to assist further study of a fascinating theme, contains well-selected and authoritative works. The author's account of the origin of mail transit by railway and of the development of the travelling post office is accurate and interesting, but quantitatively it provides the grounds for our only adverse criticism, namely, that the tremendous part played by the railways in connection with modern Post Office business is not sufficiently stressed and the reader is left with little idea of the substantial railway backbone of modern mail carrying.

The Law of Carriage By Inland Transport. Founded on Disney's Law of Carriage by Railway. By Otto Kahn-Freund. London: Stevens & Sons Ltd., 119/120, Chancery Lane, W.C.2. 8½ in. x 5½ in. x 1 in. 424 pp. Price 12s. 6d. net.—The law of road transport of passengers as well as of goods has become of increasing importance since 1929, when the eighth edition of Disney's "Law of Carriage by Railway" was published. At that date the new system of charges under the

Railways Act of 1921 had been in operation only a short time with the coming of the "appointed day" on January 1, 1928, and the four main-line railway companies had recently obtained their extended powers of road transport. In the eighth edition the general scheme laid down by the late Mr. H. W. Disney was preserved in the main, with the necessary alterations and abbreviations, so that with the addition of only a few pages, that book retained its handy size with no addition to the price. The many new developments in road transport legislation have induced the author of the present work to give it the title of "The Law of Carriage by Inland Transport founded on Disney's Law of Carriage by Railway," and have involved a substantial re-writing of Mr. Disney's book, with the result of bringing the subject up to date in a volume of 68 additional pages which retains its handy size at the former price.

The present book contains a synopsis of some of the leading principles of road transport law, such as the rules governing the road carrier's liability for the safety of goods and passengers, and the licensing system for passenger and goods vehicles introduced by road traffic legislation. At the same time, the cases decided since 1928 on matters of railway charges and the like have been more fully analysed than decisions concerning other subject matters, so as to give the practising lawyer a guide to the present state of this branch of railway law. Thus, although intended primarily to serve as an elementary introduction for law students, as well as students of commerce and those railway students who receive a special course of theoretical training under the existing educational schemes of the railway companies, the book should have a wider appeal. As in previous editions, the book is divided into three parts: The Carriage of Goods, containing 14 chapters; The Carriage of Persons, with nine chapters; and Statutory Supervision of Traffic, with two chapters, which takes the place of "Statutory Control of Railways." There is a good index.

Diesel Locomotives and Railcars. By Brian Reed. Second edition. London: The Locomotive Publishing Co. Ltd., 3, Amen Corner, E.C.4. 8½ in. by 5½ in. 210 pp. Illustrated. Price 6s. net.—The second edition of this useful book is reviewed in our *Diesel Railway Traction Supplement* this week.

Holiday Tours in Canada and U.S.A.—In this year of the Royal Visit, the spotlight of the theatre of world travel will be turned on Canada and the United States. How travellers are enabled to follow in the footsteps of the King and Queen is explained in an attractively-designed brochure which we have received from the London Office of the Canadian National Railways. The tours and their prices are listed in a companion folder; they range from a 22-day tour at £44 5s. to a grand 45-day holiday at £167, which covers almost identically the route of the Royal tour.

German Travel Literature.—Vienna and the Sudetenland, respectively, are described in two of several attractive brochures we have received from the office of the German State Railway in London; but, perhaps, the one in which the ordinary traveller will be most interested is "Western Germany," a brochure devoted to that part of the Reich which is watered by the Rhine and its tributaries—the land of *die Nibelungen*—the land that inspired Wagner. Many interesting facts and figures about Germany's capital city are found in "Berlin, Potsdam, and the Kurmark, and the other publications include "Beautiful Country around the Rhine and Main," "Baden and Württemberg"—which covers the renowned Black Forest region—and "Germany, the Land of Healing Spas."

Electrical Switchgear.—A recent batch of publications received from the English Electric Co. Ltd. describes various forms of switchgear supplied by the firm. Among them is the range of Class SXF ironclad air-insulated drawout switchgear, designed for ratings up to 600 amp. at 3,300 v. For systems up to 33,000 v. a further range of metalclad drawout switchgear is described in the firm's publication No. K71B. Still higher ratings are provided for by the class OLC horizontal drawout switchgear, which is for use on systems up to 11,000 v., 800 amp. Lower voltage circuits may be equipped with class OB air-break switching equipment, which is particularly suitable for circuits up to 650 v. a.c. or d.c., where a high breaking capacity is required. We have also received English Electric publications No. Q.62A, describing the firm's own system for tap-changing on load with small low-voltage transformers, and No. N.41C, dealing with oil-immersed switch-fuses and ring-main isolators.

THE SCRAP HEAP

During the war of the railway gauges, the following conundrum was propounded: "Why may the seven-foot gauge be said to be forbidden in the Scriptures?" "Because it is the broad way that leads to destruction."

MATTRESS SPECIAL

A special train, conveying 38 containers loaded with 2,000 mattresses, was run on April 1 by the Great Western Railway from Soho & Winson Green station, near Birmingham, to Skegness. The mattresses were for use at a big Easter holiday camp and the consignment was the largest the Great Western Railway has ever been called upon to handle in this manner.

Telephones will be installed on the train used by the King and Queen during their tour of Canada and special crews will at all times be ready to link the train with the rest of the world. Should State or family matters require the King's attention while the train is travelling between various points in Ontario or Quebec, it will be possible to halt the train and connect telephone apparatus to nearby telephone or telegraph lines. The telephones will be supervised by the Royal Canadian Mounted Police.

We are happy to announce that the first ship-load of the necessary tools and implements to commence the bed of the Drogheda Railway arrived yesterday at Baldoyle. Nothing could exceed the joy of the population of Baldoyle and along the intended line of railway; at Malahide the labouring poor, who only desire "leave to toil," evinced their gratification by three cheers for the Secretary and Directors of the Drogheda Railway.—From the "Dublin Monitor" of December 28, 1838.

The L.N.E.R. has 119 camping coaches which are stationed at picturesque places during the summer months and used for camping purposes. The company also possesses the only touring camping coach in this country, and this was on exhibition at King's Cross station on March 28 to 30. This coach has six single bedrooms, together with living room, kitchen, and so forth, and during the summer months it makes a series of weekly tours of the Yorkshire dales and moors surrounding York. The inclusive charge is from £2 to £2 10s. a person according to season, and the only additional expense is the actual cost of provisions. During the winter months this coach has been used both as a shooting box, and also in lieu of a motor trailer caravan for a special party.

Mr. T. W. Setchell retired on March 31 from the post of Chief Permanent Way Inspector, Watford, L.M.S.R., after completing over 48 years service—years which have been full of adventure—in railway construction and maintenance work. In 1890 he got a job as an engine-cleaner on the railway then being constructed between Wellingborough and Higham Ferrers, and from there he progressed to Chesterfield on another construction scheme. While at the latter place he was on an engine which turned completely over, but fortunately he escaped injury. He worked at various places on the Lancashire, Derbyshire & East Coast Railway until 1911, when he was appointed an inspector on the Stratford on Avon & Midland Junction Railway. On this line Mr. Setchell was provided with a pedal cycle for traversing his section. Once he was able to prevent a train, which had on board the General Manager of the S.M.J.R., from approaching a section where a bridge had just collapsed. Mr. Setchell went to Watford in 1928 to be inspector of a district stretching from Euston to beyond Rugby, and including numerous branches. He has two sons to carry on the family tradition; one is a carpenter at the L.M.S.R. Wolverton carriage works, and the other a telegraph lineman at St. Albans.

Police guarded the bridges along the whole 237 miles from Euston to Heysham on April 2 until the Ulster Express had safely passed. A search of the train was made before it left London. These steps were taken in consequence of an anonymous message received by the L.M.S.R. police alleging that an attempt might be made to wreck the express.

PAPER WHEELS

The Pullman Car Company is running a car, on the Chicago & North Western road, with what are called "paper wheels." The wheels have steel tyres and cast-iron hubs, and the paper is introduced in the way of filling under the tyres, for the purpose of deadening sound and diminishing the force of concussion. According to the *National Car Builder* the wheels have been running since July last under this particular car, and had been in use some four months previously. The paper device is said to be superior to wood for the purpose designed, being stronger and lighter, and free from knots, grain, or sap. It does not expand or contract, but remains in the condition in which it is put in the wheels without liability of change. It is cheaper than wood, and can be moulded into any form by pressure, and is made fire and water proof by asbestos. It is, as a substitute for wood, adapted to a variety of uses, especially in the way of ornamentation.—From the "Scientific American" of February 25, 1871.

There was not a single crane in Robert Stephenson's workshop in 1837. There were shear-legs in the yard, by which a boiler could be lifted on to a truck, and there were some portable shear-legs in the shop with which, at a great risk to life and limb, wonders were done in the way of transmitting heavy loads from one part of the shop to another. And the only steam engine in that—the most important locomotive shop of its day—was a vibrating-pillar engine, with a single 16-in. cylinder and 3-ft. stroke.

The following is extracted from the *Newcastle Journal* of March 24, 1840: "The large premium of £45 is now freely offered for the hundred-pound shares of the Hartlepool Dock & Railway Company, which a few years ago was in a state of ruinous depression."



We are indebted to Mr. S. R. Watts, of Swindon, for the photograph reproduced above of an old eighteen-pounder cannon (dated 1812) recently unearthed during the erection of telegraph poles on the G.W.R. between Chippenham and Corsham

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

SOUTH AFRICA

Railway Budget: 1939-40

Senator the Hon. A. P. J. Fourie, Minister of Railways and Harbours, in introducing the budget said that when the estimates of expenditure for 1938-39 were presented, it was expected that there would be a small balance of £4,841 in hand at March 31. The weekly earnings were estimated at £640,000, whereas they had dropped to £623,000. It was therefore anticipated that there would be a short-fall of about £1,328,000. This deficit, however, was arrived at after making provision for the various appropriations from the gross surplus. Among these appropriations provision was made for placing £1,000,000 to the credit of the Rates Equalisation Fund on the assumption that the gross profits for the year would materialise as estimated. It had been arranged, therefore, that the £1,000,000 should be written back to that fund showing the net deficit for the year as £327,819 which would be carried forward to 1939-40.

The estimated revenue for 1939-40 was, he said, £38,024,849 made up as follows: Railways, £35,588,465; harbours, £2,057,100; steamships, £139,259; airways, £240,025. Compared with the expected final revenue results for 1938-39 the estimates for the new year showed a net decrease of £215,588.

The estimated expenditure for 1939-40 was: Railways, £33,318,197; harbours, £1,004,678; steamships, £123,051; airways, £529,749; a total of £35,575,675 leaving a gross surplus of £2,449,174. Of this amount £1,000,000 would be appropriated to the Betterment Fund, £800,000 to Renewals Fund, £287,000 contribution towards deficiency in Pension and Superannuation Funds which, with the amount of £327,189 required to meet the short-fall in 1938-39, would leave an amount of £34,355 to be carried forward to 1940-41.

RHODESIA

Selector Telephone System

Authority has now been given for the extension of the selector telephone system to cover the whole of the Rhodesia Railway main line and the copperfield branch lines. The Western Electric selector telephone system was originally introduced between Bulawayo and Salisbury in 1931 and at once proved of great advantage in the control of trains and rolling stock. Work on the extension of the selector telephones to the Bulawayo—Livingstone section, 287 miles, and to the Salisbury—Umtali section, 171 miles, is now in progress. The latest extension, now authorised, is from Livingstone northwards to serve all

stations in Northern Rhodesia, both on the main line and on the branch lines to Mufulira and Luanshya, which serve the important copper mines. The provision of rapid and easy communication throughout the system will greatly facilitate traffic arrangements. It is also announced that consideration is being given to the linking up with Bulawayo of the selector telephone system now terminating at Lobatsi, on the Bulawayo—Vryburg section of the Rhodesia Railways; this system is connected with the South African Railway selector telephone lines.

Deviations and Track Renewal

Due to the steep grades and curvature of the main line between Sawmills and Bulawayo, a distance of 57 miles, the loads of trains received from the adjoining section between Dett and Sawmills (103 miles) have to be reduced by approximately half. A scheme comprising a series of eight deviations has recently been put in hand and two of the eight have now been opened to traffic. It is estimated that on the basis of present-day traffic a saving of some 90,000 train-miles a year will be obtained on completion of all these deviations. They will be laid with 80-lb. rails, and the intervening sections of line are also being relaid with this section of rail and ballasted with crushed stone.

Good progress is being made with the big track renewal programme under which a large portion of the main line 60-lb. track is being replaced with 80-lb. rails. The latest figures available show that in January, 419 miles out of the 455 miles of track had been relaid since the work began in 1936. Preparations are now being made for the fourth year's programme of a further 141 miles of relaying on the Zimba—Monze section in Northern Rhodesia.

Port Extensions at Beira

The work of extending the Pungwe deep water wharves at Beira to provide an additional two wharves, each 600 ft. long, is making rapid progress. The foundations for the first wharf are complete, and a large portion of the concrete decking has been laid. These two wharves, which will be capable of handling an annual total of 400,000 to 500,000 tons of traffic, will increase the berthing accommodation of the port to five wharves, and will considerably reduce the number of vessels which now have to lie out in the stream and handle their cargo by means of lighters. The berths will be dredged to enable ships drawing 31 ft. to come alongside. Two of the existing wharves have been widened to permit of transit sheds being erected and work is proceeding on the widening of the third wharf. The first transit shed on

the Pungwe wharf is now nearing completion.

The Railway Commission

Some public comment has been made in Rhodesia recently regarding the size and the cost of the Railway Commission, and the question was discussed at the recent Chamber of Commerce Congress in Bulawayo. The commission, which was appointed under the Railway Act of 1927, is composed of a Chairman and three Commissioners nominated by the Governments of Southern Rhodesia, Northern Rhodesia, and the Bechuanaland Protectorate, and its duty consists of the examination of the estimated and actual revenue and expenditure accounts of the Rhodesia Railways for each financial year, which also involves approving, or otherwise, of any alterations to the rates and charges, public hearings of objections to the railway accounts and tariffs, &c. A resolution before the congress suggested that the commission was unwieldy and the cost unduly high, and proposed that the establishment be reduced to one Railway Commissioner, but after discussion the resolution was withdrawn. Speaking on the subject, the Prime Minister of Southern Rhodesia, the Hon. G. M. Huggins, said that the other Governments had been consulted on the lines suggested, but were not agreeable to surrender their right to nominate members.

INDIA

Record Traffic Earnings on East Indian Railway

In his budget speech in February last, Sir Guthrie Russell, Chief Commissioner of Railways, mentioned that the East Indian Railway created a record in the matter of traffic earnings during the year 1937-38, namely, Rs. 21.15 crores (£15.86 millions). This figure is Rs. 156 lakhs more than the earnings in 1936-37, and Rs. 37 lakhs more than the previous record figure in 1927-28. Coal and general merchandise traffic contributed mainly to this satisfactory result. The earnings from passenger traffic also showed a considerable increase over the previous year. This was due mainly to increased travel in the lower classes in spite of the enhancement in the basis of third class fares of $\frac{1}{4}$ pie ($\frac{1}{4}$ d.) a mile for distances of over 50 miles.

Accelerated Goods Services

The Chief Commissioner's speech also revealed the progress that had been achieved on Indian railways in regard to the provision of a speedy goods service. The Wedgwood Committee, it will be recalled, recommended the running of additional goods and passenger services. In the past, the policy of Indian railways has been to run the heaviest possible loads for the longest possible distances, the cheapest method of operation, though

not always the quickest. The advent of motor transport with its door-to-door services and small fast units has made it necessary to quicken up goods transport by rail, a policy involving reductions in loads and increases in train-mileage and operating expenses. These efforts to improve goods services have not been confined to any particular railway. Railways generally have carried out a detailed examination of goods train services so as to improve running speed, provide fast through trains for traffic offering in large quantities, and to eliminate detentions to trains *en route*. Sir Guthrie Russell gave some typical instances of the improvements effected. On the Assam-Bengal Railway, the average transit time from the date of booking of a consignment at Chittagong at one end of the railway to Tinsukia at the other end was four days, representing a daily average run of 144 miles all on single metre gauge line. The journey included transit over the hill section at a low speed. Trains carrying petrol and oil tank wagons between Tinsukia and Pandu were now scheduled to complete the journey of 324 miles in about 18 hr. On the Eastern Bengal Railway express goods trains running at 30 m.p.h. were introduced on certain sections of the system during the heavy jute season. On the East Indian Railway special sectional arrangements at goods sheds and the introduction of duplicate express trains had, Sir Guthrie explained, secured a reduction of about 24 hr. in the transit time of goods booked at Asansol and Ranee-ganj for Howrah.

All-round Improvement

On the G.I.P.R., 2,544 through goods trains were run in 1937-38 against 1,766 in the previous year. The Bombay-Poona goods trains averaged 19 m.p.h., and cotton trains averaged 13 m.p.h. for a 514-mile journey. The express goods service introduced on the South Indian Railway between Madras and Tuticorin—all metre gauge—covered the whole distance in 33 hr. in one direction and in 36 hr. in the other. As a result of special surveys in respect of traffic in smalls, the minimum load for wagons containing smalls had been reduced in many cases. On some railways arrangements were made for the sorting and repacking work to be done by special train staff in the course of train runs. Under an improved system of operation for goods traffic from Bombay, the B.B. & C.I.R. was, he said, now giving next-day delivery at stations up to Surat, second-day delivery from Surat to Anand, and third-day delivery from Anand to Ahmedabad. On the metre gauge, consignments from Ahmedabad are reaching Beawar in two days in place of six, and Bhiwani in four days instead of seven. Consignments from Kalol were reaching Cawnpore in six days instead of eleven. Sir Guthrie expressed the confident hope that these substantial improvements were only a

beginning of a still more efficient goods service to come.

Ticketless Travel

During the year 1937-38, the total number of passengers detected travelling without proper tickets was a little below 3 millions, and a sum of nearly Rs. 27 lakhs was due from them.

To check and prevent ticketless travel, the system productive of the best results has been found to be a combination of ticket collectors and checkers at stations and travelling ticket examiners to make surprise checks on trains. Most of the railways have special squads to check trains in areas of heavy traffic, where the practice of obtaining free rides has been found to be widely prevalent. On some railways a "special branch" carries systematic detective work into investigation as to the misuse of season tickets and into the practice of re-selling return halves of return tickets.

EIRE

Reversion from Road Motor Transport

The development of road traffic is so continuous and the rates charged by cut-throat competitors comparatively so cheap that it is quite unusual to find a reversion to old methods. As mentioned previously in these columns, cattle, sheep, and pigs are mostly brought by road motor vehicles to the stations from fairs distant from three or four to twenty miles, yet the dealers find that, in some cases, they are able to walk the stock to the station much more economically than paying haulage. From Ballygar fair, eight miles from Roscommon station, on March 18, most of the dealers walked their cattle to the railway for conveyance thence by rail to destination, thus saving an amount of approximately 2s. a beast.

Irregular Practices in Road Transport

It has lately become more apparent that regular and irregular hauliers of goods by road are in the habit—at any rate occasionally—of conveying one or two passengers on their journeys, though payment is not necessarily received. On occasions when payment is actually made—even though the haulier, upon being prosecuted, denies this—the remuneration undoubtedly helps towards the expense of running the lorry, and may sometimes render a run economical which, but for the addition of the fare, would result in a loss.

Then there is a more serious case in which passengers are conveyed free of charge, when the free journey insures the carriage of goods belonging to one of the passengers.

Another, and difficult to prove, irregularity is where a regular haulier has one or two lorries licensed for carriage of goods for reward, and others unlicensed for this purpose. When

such a person wishes to convey a quantity of traffic for reward which the two licensed lorries will not hold, he will charge an excess of, perhaps, double rate for the carriage of half the traffic on the licensed lorry, and thereby nominally carry the remainder of the traffic free by the unlicensed lorry or lorries.

The Punishment Fits the Crime

Generally speaking, however, it would appear, that in cases of successful prosecution, the penalties for infringement of the law are becoming more severe.

An unusual case of alleged irregularity was reported lately when it was stated that the furniture of a *garda* (policeman) who was transferred from one place to another, was carried by a lorry, the property of a person who had no licence. The furniture of another policeman, transferred to replace the first (an exchange having taken place) was carried back by the same lorry. There was, of course, no proof that any reward was given for the haulage, and no prosecution could be sustained, but it is quite feasible to imagine that a haulier would be quite willing to oblige the local *gardai*.

VICTORIA

Unusual Special Train Working

In November the Victorian Model Railway Society chartered a petrol-electric railcar for the first of a series of "off the beaten track" excursions. It took the members and friends from Melbourne through Tottenham freight yard and by way of the Albion-Broadmeadows freight line, over the highest purely railway bridge in Australia—a trestle structure 180 ft. high and 1,257 ft. long—to Willan, and thence by the north-eastern main line over the 1,145-ft. Continental divide to Bendigo. A derelict railway, locomotive and freight depots as well as the bridge were inspected. The return journey was made *via* Castlemaine, Elphinstone tunnel—the longest in Victoria and laid with continuously-welded rails on both tracks, 1,700 ft. between joints—and with inspections of other viaducts, relaying and other works, arrangements being made for intermediate stops wherever required, subject to safe working and ordinary traffic schedules.

For the annual Eucharistic Festival at Rupertswood, about 25 miles from Melbourne, where there is no station, siding, or block post, additional block posts and other arrangements were made for running a number of special trains.

New Line Opened to Public Traffic

A new 38-mile line from Yarrowonga to Oaklands, N.S.W., was recently opened for public traffic without ceremonial. It had been worked by the Construction Branch since 1931-32, mainly with Fordson tractors. The line was constructed under the Borders

Railway Act. As the line is of the Victorian gauge, Oaklands junction, on the N.S.W.G.R., is laid out for mixed gauge working. There are five intermediate sidings, with hand-worked and -locked points, and a shelter and telephone at each; the whole 38 miles are operated as one section under the Train Section Order system. Close to Yarrawonga the line crosses the Murray river on a steel bridge comprising three main spans of 100 ft. and four 36-ft. spans carried on concrete piers, approached from the N.S.W. side by 32 26-ft. spans and 4 36-ft. spans supported by wooden piles. The track consists of standard 60-lb. and 75-lb. F.B. rails and sand ballast. The ruling gradient is 1 in 150 and the sharpest curve 15-ch. radius. "N" class and lighter locomotives haul 75-wagon loads of 1,015 tons in the down and 1,160 tons in the up direction. Fordson tractors are also used for light trains.

ARGENTINA

Grain Transport Receipts

According to a report issued by the National Grain and Elevators Board, the income derived by the Argentine railways from grain freights during the year 1937 (presumably the last for which full details are available) amounted to 108,000,000 pesos on the transportation of 16,524,000 tons of grain, an average rate of \$0.65 per 100 kg. An analysis of the individual rates shows that the one for wheat was \$0.75 per 100 kg.; for maize, \$0.55; and for linseed, \$0.80. In respect of the wagon price, the percentages of incidence of these freights were 5.6, 8.2, and 5.1 per cent. for wheat, maize, and linseed, respectively. The report states that the average rate favours Argentina considerably, when compared with grain freight charges in other countries.

Carriage of Grain in Bulk

A comparison between the amount of grain transported in bulk and in bags shows that over 44 per cent. of all grain carried by the railways was transported in bulk, and in the case of the Rosario—Puerto Belgrano Railway 89 per cent. was carried in this way. With regard to wheat, only a very small percentage—less than 18 per cent.—was carried in bulk, and this was transported almost entirely by the Central Argentine, Santa Fé and B.A. & Pacific Railways. The difference in volume between wheat and maize is explained by the fact that the majority of the elevators and granaries in the country are located in the maize districts. In the wheat regions, which are more extensive than the maize, there are large zones, more particularly on the B.A.G.S. and B.A.W.R., with very few elevators.

According to the report, the heaviest tonnage in bulk form was carried by the C.A.R., amounting to 3,240,000 tons of wheat and maize, representing

nearly 75 per cent. of the total carried in bulk by the principal Argentine railways during 1937. This is accounted for by the fact that the majority of the elevators and granaries are situated at stations on this company's line. It is to be noted, too, that more maize—although proportionately less than other railways in bulk—than wheat was carried by this railway, the percentage in the case of maize being 59.3, and for wheat 42.7. The percentage carried in bulk by the other railways varies considerably, but it is noticeably lower than the volume handled by the C.A.R. and Rosario—Puerto Belgrano Railway. The wheat and maize transported by the B.A. Midland, B.A. Provincial and the East and Central North Argentine (State) lines during 1937 was carried only in bags.

CHINA

Remarkable War Achievement by Railways

During the first year of the Sino-Japanese war, more than 9,500,000 Chinese troops and 2,391,400 tons of war materials were transported over the five single-track systems, the Nanking—Shanghai—Hangchow, the Peiping—Hankow, the Tientsin—Pukow, the Canton—Hankow, and the Chekiang—Kiangsi Railways. These were carried in 10,021 military trains, run in addition to the regular civil passenger and freight services. Yet the service was in such excellent order and efficiency that not a single accident was reported during this extraordinary period.

Of these lines, the 1,363-km. Peiping—Hankow Railway topped the list with 4,039 military trains, transporting 2,350,000 troops and 1,300,000 tons of war materials during the first year of the hostilities. No fewer than 30 trains would leave the Hankow station in one day during the height of the fighting in the Hsueh war area. Between August and November, 1937, the 582-km. Nanking—Shanghai—Hangchow line, including the Soochow—Kaishin section, transported 710,000 troops and 21,400 tons of munitions by 628 military trains. The 1,009-km. Tientsin—Pukow line carried more than 3,000,000 troops in 3,600 trains during the year. The 935-km. Chekiang—Kiangsi line transported 660,000 troops and 120,000 tons of materials from July, 1937, to January, 1938, in 577 trains.

The 1,045-km. Canton—Hankow line, over which most of China's war materials from abroad were transported in the first stage of the war, moved 1,030,000 troops and 500,000 tons of materials in 1,177 trains between July, 1937, and April, 1938, and an average of 150,000 troops and 90,000 tons of materials a month during the five months from May to September, 1938. And it is as well to remember that that huge volume of men and munitions was moved over the most bombed railway in the world. More-

over, the Lung—Hai line ran 2,344 troop trains and carried well over 1,000,000 men in the year.

Passenger and freight services, although handicapped by the large volume of troops and war materials that had to be transported, were in no way neglected. Before its occupation by the Japanese, each line maintained its civil service to the last minute. The last train from Hangchow left on Christmas Eve, 1937, the night before Japanese vanguards entered that town. Large numbers of refugees from the various war areas were also transported by special trains provided by the railway authorities free of charge, and sometimes with free food, water, and personal services from the railway officers. The empty military trains were loaded with freight, wounded soldiers, and refugees on their return journeys from the war areas.

The Canton—Hankow line transported 76,000 tons of goods worth \$41,000,000, in the first ten months of 1938. The Chekiang—Kiangsi line moved 4,000 tons of salt from Chekiang to Kiangsi, and 5,000 tons of rice from Kiangsi to Chekiang each month. Besides, 7,308 tons of tea was also sent by this line to central China between April and August, 1938.

JAPAN

Important New Project

Evidence is not wanting that the Government Railways administration is determined to provide very substantially improved train services in this country to connect with the through trains already running through Chosen, and Manchukuo to Peiping.

According to newspaper reports the first step in this direction is the announcement of a new scheme to construct a standard-gauge line between Tokyo and Shimonoseki parallel to the existing 3 ft. 6 in. gauge track; the distance is 702 miles. The Fuji express at present takes 18 hr. 25 min. between these points, and it is estimated that standard gauge trains will be able to do the run in about 7½ hr., and that the Tokyo—Osaka time will be reduced from over 8 hr. to 4½ hr. for the 353 miles.*

The proposed new route would leave Shinjuku station (Tokyo) and run through Nagoya, Osaka, Kobe, Okayama, and Hiroshima to Shimonoseki, the western terminal. A second five-mile Tanna tunnel would probably be necessary. Fast expresses of the Asia type in Manchukuo are envisaged for ordinary traffic, and possibly also diesel-electric super expresses for the through Peiping services. The time to Osaka would thus be reduced to about 5 hr. or under. The estimated cost of the scheme is said to be Y. 475,000,000 (about £28,000,000), and it is expected to take six years.

* Mileages are by present route. The new line, to which the timings apply, will reduce the distances.

BRITISH RAILWAY STATISTICS

"The Railway Gazette" monthly table for December, 1938, as compared with December, 1937, compiled from the Ministry of Transport Statement No. 229

Description	Great Britain*	G.W.R.	L.N.E.R.	L.M.S.R.	S.R.
PASSENGER TRAIN TRAFFIC—					
Number of pass. journeys (ex. season ticket holders)	106,218,107	7,437,583	14,533,902	23,194,790	19,139,004
Increase (+) or decrease (—)	2,420,784	30,117	409,483	127,487	381,448
Passenger receipts (excluding season ticket holders)	£4,768,613	£693,152	£956,549	£1,415,863	£1,071,275
Increase (+) or decrease (—)	£55,277	£12,345	£10,490	£14,793	£40,176
Season ticket receipts	£766,645	£39,553	£123,882	£174,085	£292,768
Increase (+) or decrease (—)	£16,318	£2,556	£751	£6,256	£2,634
Parcels and misc. traffic receipts (excluding parcels post)	£1,092,271	£197,296	£338,299	£408,996	£128,305
Increase (+) or decrease (—)	£33,212	£9,997	£2,620	£22,011	£3,094
FREIGHT TRAIN TRAFFIC—					
Freight traffic (tons) (excluding free-hauled)	21,165,484	4,806,865	9,604,002	10,277,980	1,204,676
Increase (+) or decrease (—)	3,160,570	940,611	1,320,454	1,351,743	126,601
Net ton-miles (excluding free-hauled)	1,214,840,863	217,675,354	408,062,614	505,591,011	49,241,571
Increase (+) or decrease (—)	170,712,220	42,980,010	58,569,859	62,019,342	3,942,227
Average length of haul (miles) (excluding free-hauled)	57.40	45.28	42.49	49.19	40.88
Increase (+) or decrease (—)	0.44	0.07	0.22	0.38	0.93
Freight traffic receipts	£6,737,954	£1,101,700	£2,152,234	£2,917,000	£361,309
Increase (+) or decrease (—)	£753,970	£122,340	£171,341	£402,000	£32,483
Receipts per ton-mile	1.331d.	1.21d.	1.27d.	1.38d.	1.76d.
Increase (+) or decrease (—)	0.033d.	0.09d.	0.07d.	0.02d.	0.02d.
Freight train-loads: Average train-load (tons)	125.67	128.78	129.89	125.56	96.64
Increase (+) or decrease (—)	8.33	13.63	7.53	6.89	7.59
Net ton-miles—					
Per train engine-hour	925.30	965.22	968.03	905.28	704.76
Increase (+) or decrease (—)	55.47	2.00	37.15	100.37	30.93
Per shunting-hour	854.84	746.15	936.72	908.10	529.99
Per total engine-hour	444.34	420.83	476.06	453.34	302.50
Net ton-miles per route-mile per working day	2,680	2,578	2,847	3,228	1,049
Increase (+) or decrease (—)	486	602	526	529	132
Wagon-miles. Total	344,839,374	60,919,939	121,319,351	146,135,346	16,144,028
Increase (+) or decrease (—)	25,928,114	6,690,936	9,507,254	8,946,261	774,071
Percentage of loaded to total	67.35	68.93	65.10	68.59	67.28
Wagons per train. Total	33.59	33.12	34.11	33.90	29.90
Increase (+) or decrease (—)	0.36	1.32	0.12	—	1.32
Loaded	22.62	22.83	22.20	23.25	20.12
Empty	10.97	10.29	11.91	10.65	9.78
Train-miles. Coaching—Per train-hour	14.94	13.66	14.03	14.09	18.02
Per engine-hour	11.98	10.77	10.77	10.86	15.19
Train miles. Freight—Per train-hour	8.67	9.09	8.75	8.44	8.92
Per engine-hour	3.54	3.29	3.72	3.61	3.09
Engine miles. Total	46,471,999	7,445,513	12,816,446	17,036,961	6,411,855
Increase (+) or decrease (—)	1,199,364	194,454	564,816	655,881	220,905
Mileage run by engines. Total train-miles—					
Coaching	23,418,917	3,197,515	5,324,029	7,447,153	4,830,661
Freight	10,265,208	1,839,346	3,557,064	4,310,278	539,891
Engine-hours in traffic. Total	5,060,831	884,545	1,522,338	1,959,777	511,274
Increase (+) or decrease (—)	421,447	56,112	132,550	236,576	5,639
Shunting miles per 100 train-miles—					
Coaching	7.63	7.39	6.96	7.97	8.54
Freight	72.93	85.96	67.85	67.66	93.99

Passenger Traffic Statistics: Number of journeys, receipts, and receipts per journey (excluding season ticket holders)—December, 1938

Subject	Great Britain	G.W.R.	L.N.E.R.	L.M.S.R.	S.R.	Cheshire Lines	Liverpool Overhead	L.P.T.B.†	Mersey
Full fares—									
Pass. journeys	35,687,233	670,072	1,003,833	1,398,640	3,217,529	13,182	163,710	28,292,835	96,224
Gross receipts	£931,933	£74,608	£120,663	£119,371	£207,559	£2,101	£1,735	£388,478	£1,669
Receipts per pass.	6.27d.	26.72d.	28.85d.	20.48d.	15.48d.	38.25d.	2.54d.	3.30d.	4.16d.
Reduced fares—									
Excursion and week-end—									
Pass. journeys	39,824,295	4,359,101	9,022,038	13,352,201	9,230,027	418,125	70,128	1,583,800	725,640
Gross receipts	£2,903,349	£481,987	£662,379	£1,027,394	£617,773	£25,924	£697	£34,381	£10,869
Receipts per pass. journey	17.50d.	26.54d.	17.62d.	18.47d.	16.06d.	14.88d.	2.39d.	5.21d.	3.59d.
Workmen—									
Pass. journeys	26,626,926	1,829,988	3,628,090	7,276,230	5,818,556	255,086	238,902	6,477,432	254,140
Gross receipts	£401,526	£28,045	£61,257	£120,879	£98,075	£4,388	£2,106	£74,049	£2,208
Receipts per pass. journey	3.62d.	3.68d.	4.05d.	3.99d.	4.05d.	4.13d.	2.12d.	2.74d.	2.09d.
Other—									
Pass. journeys	4,071,139	576,400	878,071	1,164,161	871,912	28,654	56,062	407,712	12,748
Gross receipts	£520,418	£105,933	£109,746	£143,115	£146,754	£3,264	£385	£3,594	£181
Receipts per pass. journey	30.68d.	41.11d.	30.00d.	29.50d.	40.40d.	27.34d.	1.65d.	2.12d.	3.41d.
Total—									
Pass. journeys	106,218,107	7,437,583	14,533,902	23,194,790	19,139,004	715,117	528,802	36,761,779	1,088,752
Gross receipts	£4,768,613	£693,152	£956,549	£1,415,863	£1,071,275	£35,749	£4,923	£500,502	£14,927
Receipts per pass.	10.77d.	22.37d.	15.80d.	14.65d.	13.43d.	12.00d.	2.23d.	3.27d.	3.29d.

* All standard gauge railways

† Includes passengers originating on the railway undertakings, and on the Whitechapel and Bow Joint Railway

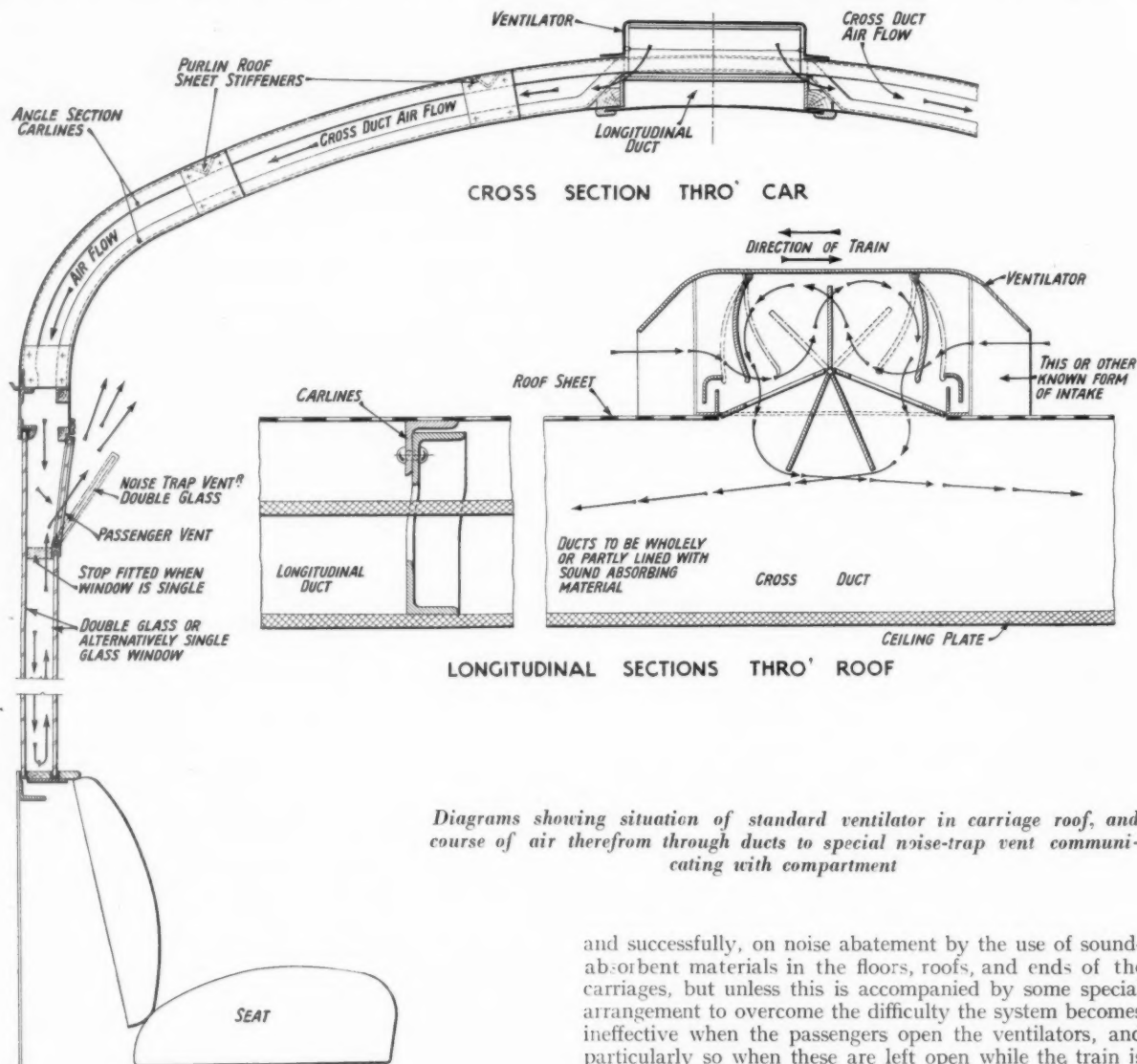
A NEW RAILWAY CARRIAGE FITTING

Designed for improving ventilation and reducing noise

THE accompanying drawing illustrates a system designed and patented by Mr. S. H. H. Barratt, A.M.Inst.C.E., M.I.Loco.E., for improving ventilation and excluding noise in railway carriages. The ducts formed in the roofing and walls of the vehicles are lined

can be admitted and/or extracted in accordance with the direction in which the train is running. These, however, do nothing towards excluding noise, which is the chief object of the present invention.

A considerable amount of money is now being spent,



Diagrams showing situation of standard ventilator in carriage roof, and course of air therefrom through ducts to special noise-trap vent communicating with compartment

with sound-absorbent material in connection with a double-glass ventilator through which fresh air can enter, whilst noise is excluded. Any system which provides for the introduction of air into railway carriages but which cannot be adjusted by the passengers is open to objection, and it is generally understood that passengers like to feel fresh air coming into the compartments through ventilators which they can regulate themselves. Systems are, of course, already in use which allow of the adjustment of glass and metal vanes above the main windows through which air

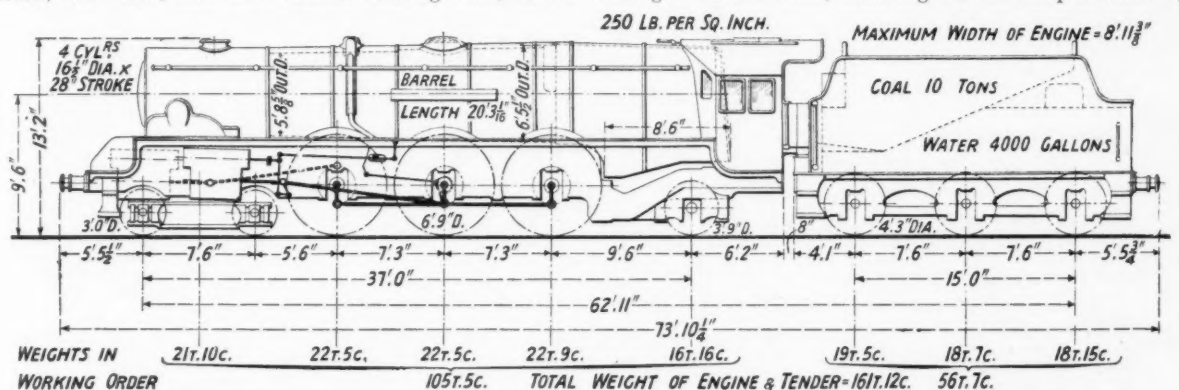
and successfully, on noise abatement by the use of sound-absorbent materials in the floors, roofs, and ends of the carriages, but unless this is accompanied by some special arrangement to overcome the difficulty the system becomes ineffective when the passengers open the ventilators, and particularly so when these are left open while the train is passing through tunnels. With the arrangement illustrated it is proposed that the ordinary extractor ventilator in the roofs of the carriages will be retained, and an advantage of the system is that there are no projections outside the carriage to affect the streamlining of the vehicles. The outside and inside glass can be easily cleaned by ordinary means. The drawing is sufficiently self-explanatory to need no further description. The arrows indicate the flow of air from outside through the ducts and finally through the noise-trap ventilator, which may be fitted with either double or single windows.

LOCOMOTIVE TESTS ON THE L.M.S.R.

Remarkable power output and other results obtained with a 600-ton train between Crewe and Glasgow and return

WITH a view to investigating the power development of which the Class 7 "Coronation" 4-6-2 type engines are capable, and to obtain a variety of other technical data relative to them, a test was recently carried out on the L.M.S.R. main line between Crewe and Glasgow when some remarkably interesting and important results were obtained. The engine selected for the test was No. 6234 *Duchess of Abercorn*, one of the latest of the class, and differing from its forerunners in having recently had a double blastpipe and chimney fitted. The engine is one of the non-streamlined series. The route followed was the main line from Crewe to Glasgow and return, 487 miles, and the schedule running time, based

Minshull Vernon (owing to single line working being in operation) and it then proceeded at caution a further $3\frac{3}{4}$ miles, *i.e.*, to Winsford junction. From this latter point to Glasgow the scheduled running time was 255 min. with booked stops of 2 min. each at Carlisle and Beattock. On the actual run the train stopped 4 min. at Carlisle, and the Beattock stop was cut out, but a stop of 4 min. 35 sec. was made at Symington for water; the net running time from Winsford to Glasgow was 245 min., 10 min. being gained on the overall schedule. The average running speed between Winsford junction and Glasgow was 57.2 m.p.h. From Glasgow to Crewe the schedule arranged was 271 min., including a 2 min. stop at Carlisle,



HEATING SURFACE, TUBES—			
LARGE AND SMALL	...	...	2,577.0 SQ. FT.
FIREBOX	...	...	230.5 "
TOTAL (EVAPORATIVE)	...	...	2,807.5 "
SUPERHEATER	...	...	856.0 "
COMBINED HEATING SURFACES	...	...	3,663.5 "

SUPERHEATER ELEMENTS (TRIPLE)			
LARGE TUBES	...	40-5 1/2 IN. DIA. OUTS.	19 FT. 3 IN.
SMALL TUBES	...	129-2 3/8 IN. DIA. OUTS.	BET. TUBEPLATES
GRATE AREA	...	...	50.0 SQ. FT.
TRACTIVE EFFORT (AT 85 PER CENT. B.P.)	...	...	40,000 LB.

Diagram showing general dimensions and weight distribution of "Duchess" class locomotives, L.M.S.R. The engine used on the test, No. 6234, differed in having a double blastpipe and chimney

on that of the 7-hr. Royal Scot Euston-Glasgow service, provided for an average speed of 55 m.p.h. on the outward journey and 54.5 m.p.h. on the return. The test load was 184 tons in excess of the "XL" limit of 420 tons now obtaining on the Royal Scot service, and it will be observed from the gradient diagram reproduced that the route involved the ascent of Shap and Beattock when running in each direction. The test was made on February 26, and the train consisted of 20 vehicles, including the dynamometer car, representing a total tare weight of 604 tons. The weather conditions were fair at the commencement of the test, with a light wind, but north of Carlisle the wind increased, and on the return run from Glasgow a strong oblique wind, with sleet, had to be contended with; these conditions modified south of Carlisle. The engine was capably operated throughout by the following foot-plate staff:—

Crewe to Carlisle	..	..	Driver G. Garrett and fireman
Carlisle to Crewe	..	..	S. Farrington (Crewe).
Carlisle to Glasgow	..	..	Driver J. Marshall and fireman
			D. Lynn (Polmadie).
Glasgow to Carlisle	..	..	Driver N. McLean and fireman
			A. Smith (Polmadie).

On the outward journey from Crewe to Glasgow the train was brought to a stand, after running 5 miles, at

or 269 min. running time, but owing to early arrival the stop at Carlisle was 9 1/2 min.; the total running time was 259 min. 35 sec. Thus the train gained 9 min. 25 sec. on the up test schedule, the average speed between Glasgow and Crewe being 56.2 m.p.h.

The ascents of Shap and Beattock under the conditions of the special schedule, which by reason of load considerably exceeded the ordinary range of service conditions, provided the main features of the test and the data secured. The scheduled sectional running times and actual running times are given in Table I, and an analysis of the performance on the ascents in Table II. A graph of the speed and drawbar horsepower is shown in conjunction with the gradient diagram also reproduced. From these it will be seen that the schedule was more than maintained on the most difficult parts of the route.

Power Development, Cut-Off, and Speed

The performance of the test called for a high and sustained power development, and it will be seen that the drawbar horsepower was almost continuously in the region of 1,800, the maximum sustained d.b.h.p. being approximately 2,500. Calculations have been made as to the total power developed in the cylinders on the main gradient

TABLE I.—SCHEDULED AND ACTUAL RUNNING TIMES

Test run : February 26, 1939. Engine : 4-6-2 No. 6234, *Duchess of Abercorn*. Load : 20 coaches, 604 tons tare

L.M.S.R. CREWE-GLASGOW

L.M.S.R. GLASGOW-CREWE

Distance		Schedule	Actual	Distance		Schedule	Actual
miles		min.	min. sec.	miles		min.	min. sec.
0.0	CREWE ..	0	0 00	0.0	GLASGOW CENTRAL ..	0	0 00
2.7	Coppenhall Junction ..	5	5 45	12.9	MOTHERWELL ..	19	19 45
			p.w.s.†	18.3	LAW JUNCTION ..	29	26 40
8.7	Winsford Junction ..	11	33 30	28.8	CARSTAIRS* ..	43	39 30
16.2	Weaver Junction† ..	18	40 40	35.4	Symington ..	51	48 15
24.0	WARRINGTON† ..	25	47 35	39.1	Lamington ..	—	52 08
27.5	Winwick Junction ..	29	51 00	44.5	Abington ..	—	57 13
35.8	WIGAN ..	38	58 50	47.0	Crawford ..	—	59 36
39.1	Standish Junction ..	42	63 20	49.7	Elvanfoot ..	—	62 03
45.5	Euxton Junction+ ..	49	69 50	52.6	Beattock Summit ..	69	64 40
50.9	PRESTON* ..	55	75 45	62.6	Beattock ..	79	73 35
52.2	Oxheys ..	58	79 40	76.5	LOCKERBIE ..	91	84 25
60.4	Garstang ..	66	88 00	93.7	Gretna ..	106	97 45
			sigs.	102.3	Carlisle ..	116	106 30
71.9	LANCASTER† ..	76	98 15	0.0	Wreay ..	—	8 59
78.2	CARNFORTH ..	81	104 05	4.9	Southwaite ..	—	11 52
91.0	OXENHOLME ..	95	115 30	7.4	Calthwaite ..	—	15 11
104.1	Tebay ..	111	130 20	10.8	Plumpton ..	19	17 45
109.6	Shap Summit ..	120	137 25	13.1	PENRITH† ..	24	21 50
123.1	PENRITH† ..	133	149 00	17.9	Shap Summit ..	43	40 15
127.9	Plumpton ..	137	153 30	31.4	Tebay ..	48	44 40
141.0	CARLISLE§ ..	150	165 30||	36.9	Grayrigg ..	—	50 23
		0	0 00	42.9	OXENHOLME ..	60	56 30
8.6	Gretna ..	11	10 40	50.0	CARNFORTH ..	71	67 00
25.8	LOCKERBIE ..	28	28 10	62.8	LANCASTER ..	76	72 20
39.7	Beattock ..	41	pass	80.6	Garstang ..	87	84 00
49.7	Beattock Summit ..	43	39 40	90.1	PRESTON* ..	97	93 35
66.9	Symington ..	61	56 10	99.4	Coppull ..	—	105 53
		pass	74 00	105.2	WIGAN† ..	116	113 05
73.5	CARSTAIRS* ..	76	78 25	117.0	WARRINGTON† ..	128	126 10
84.0	LAW JUNCTION† ..	83	86 40	124.8	Weaver Junction† ..	136	134 25
89.4	MOTHERWELL† ..	94	97 20	141.0	CREWE ..	153	153 05
93.9	Uddingston* ..	100	103 20				
95.7	Newton ..	104	109 50				
98.3	Rutherglen Junction ..	108	110 25				
102.3	GLASGOW CENTRAL ..	112	113 25				
		118	118 25				

* Service slack, severe

† Service slack, moderate or slight

‡ Stop and single line working

§ Stop of 4 min.

|| 142 min. net

Coal (excluding shed duties)—

Lb. per mile ..	68.7
Lb. per d.b.h.p.-hr. ..	3.12
Lb. per sq. ft. of grate area per hour (actual running time) ..	75.7

Water (excluding shed duties)—

Gallons per mile (continuous blow-down in operation throughout test) ..	53.1
Lb. per d.b.h.p.-hr. ..	24.15
Evaporation lb. of water per lb. of coal ..	7.74

The weight of the engine and tender was, for the purpose of the test, calculated at two-thirds of the coal and water capacities, i.e., 152.3 tons as compared with the full working order weight of 161 tons 12 cwt.

TABLE II.—L.M.S.R. PERFORMANCE OF 4-6-2 NO. 6234 ON PRINCIPAL GRADIENTS: TEST RUNS OF FEBRUARY 26, 1939

	CREWE TO GLASGOW						GLASGOW TO CREWE						
	Carnforth-Shap Summit			Gretna-Beattock Summit			Motherwell-Beattock Summit			Carlisle-Shap Summit			
	Carnforth to Oxenholme	Oxenholme to Tebay	Tebay to Shap Summit	Gretna to Lockerbie	Lockerbie to Beattock	Beattock to Beattock Summit	Motherwell to Law Junction	Law Junction to Carstairs	Carstairs to Symington	Symington to Beattock Summit	Carlisle to Plumpton	Plumpton to Penrith	Penrith to Shap Summit
Length of ascent, miles...	12.96	13.08	5.69	17.27	13.96	10.13	5.42	10.53	6.74	17.28	13.03	4.77	13.68
Average drawbar horsepower ...	1,870	1,668	1,830	1,598	1,609	1,724	1,923	(a)	1,520	1,860	1,822	2,000	1,560
Maximum drawbar horsepower ...	2,120	1,934	2,065	1,733	1,823	2,081	1,998	1,978	1,638	2,282	2,511	2,394	2,331
Maximum indicated horsepower (calculated) ..	3,209	2,806	2,963	2,236	2,556	2,761	2,583	2,567	2,138	3,333	3,348	3,241	3,021
Average speed of ascent, m.p.h. ...	68.0	53.0	47.9	59.3	72.5	36.8	46.7	49.4	46.1	63.4	43.9	71.4	44.4
Cut-off range, per cent. of stroke ...	25	25	35	25	25	40	30	35	25	35	35	30	40
Boiler pressure, lb. per sq. in. ...	250	245	240	250	245	245	250	250	245	245	245	230	245

(a) Not shown, as this section includes some coasting

and the maximum values are given in Table II, from which it will be noted that the highest sustained cylinder power developed was approximately 3,350 h.p. For a considerable part of the test the engine was operated with a cut-off range of 20 to 30 per cent.; the maximum cut-off was 40.

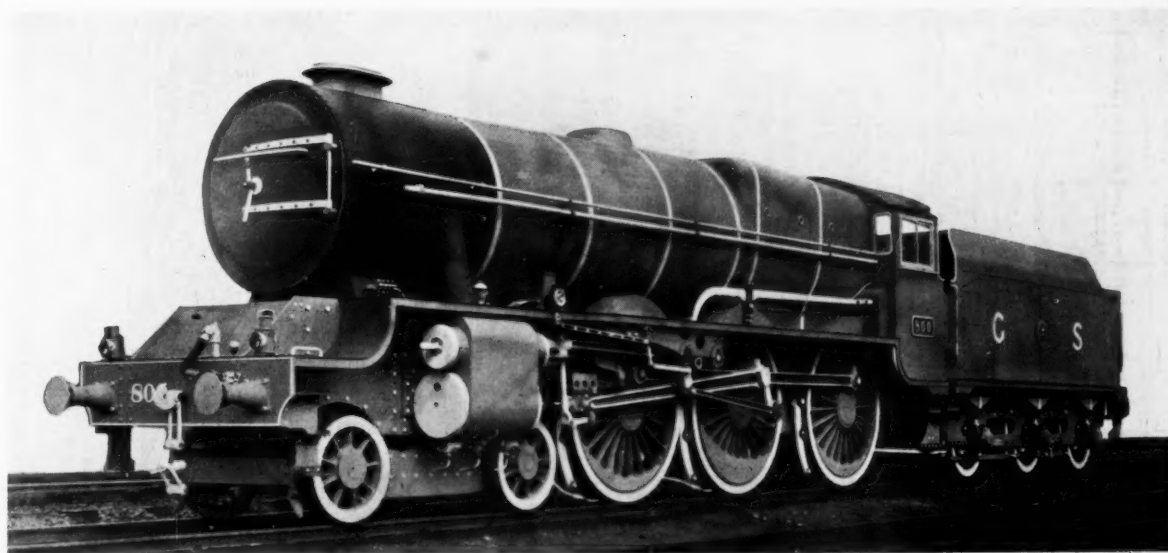
The ascent from Beattock to Beattock Summit was one of the most outstanding engine performances of the test, the 10 miles—graded throughout at between 1 in 69 and 1 in 88 up—being run at an average speed of 36.8 m.p.h. This was accomplished with a cut-off of 30 to 40 per cent., the average d.b.h.p. being 1,724 with a maximum value of 2,081. More notable, however, was the climb from Glasgow to Beattock Summit in the southbound direction, an average speed of no less than 63.4 m.p.h. being sustained from Symington to Beattock Summit. Up the rising grades of the Clyde valley from Lamington speed was continuously over 60 m.p.h., and the final 2 miles at

1 in 99 reduced speed only from 68 to 63 m.p.h. Average drawbar h.p. throughout this length was 1,860 and maximum 2,282. Another fine performance was that from Carlisle to Shap Summit, the whole ascent being made at an average speed of 46.9 m.p.h. while from leaving Carlisle to passing Plumpton, 13 miles with an average gradient of approximately 1 in 175 up, the average speed was 43.9 m.p.h., the average d.b.h.p. 1,822, and the maximum d.b.h.p. 2,511.

A matter of obviously great importance was the efficiency which attended the carrying out of the test. In Table III are given particulars of the coal and water consumption, and of the work done by the engine on the train. The results embrace the whole test. Although a high average rate of combustion (in lb. of coal per sq. ft. grate per hr.) was necessitated, the consumption in lb. of coal per d.b.h.p. hour (3.12) shows that the economy of the engine was well maintained.

NEW G.S.R. 4-6-0 LOCOMOTIVES

Recently built at the company's works, Inchicore, Dublin, these three-cylinder engines have been introduced for heavy passenger service between Dublin and Cork, on the Great Southern Railways



THE first of a new series of express passenger locomotives, to be known as the "800" class, has recently been completed at the works of the Great Southern Railways at Inchicore, Dublin. The design incorporates three single-expansion cylinders and the 4-6-0 wheel arrangement. The inside cylinder is placed ahead of the outside ones and drives the crank-axle of the leading pair of coupled wheels, and the outside cylinders drive the middle pair. Steam distribution is effected by 9-in. dia. piston valves having a maximum travel of $6\frac{3}{4}$ in.; each cylinder is provided with an independent Walschaerts valve gear. The crank-axle is of the built up pattern, having its revolving masses balanced by extension of the crank webs. The steamchests are placed above the cylinders and it will be noted from the sectional elevation drawing on page 618 that a double chimney is fitted, the inside cylinder exhausting through the front portion

and the outside cylinders through the rear portion of the chimney. The drawing also shows the arrangement of the separate blastpipes and the steam piping of the cylinders. This appears to us to be a very well arranged front end which should assure freedom in both steaming and exhaust.

The boiler, which is of large proportions, is set with its centre line 9 ft. 6 in. above the level of the rails. It is of parallel formation and built of 2 per cent. nickel steel plates; the diameter of the forward section is 5 ft. 9½ in. and the rear section 5 ft. 10¾ in. measured inside, and the plates have a thickness of $\frac{3}{8}$ in. The length between the tube plates is 14 ft. 5½ in. The McLeSco superheater is comprised of twenty-eight elements, housed in smoke tubes 5½ in. dia. outside, and the copper ends are expanded into Kuprodor copper bushes screwed into the tube plates. The small tubes number 143, the diameter

in this case being 2 in. outside. A multiple valve regulator is located in the smokebox and occupies the position shown in the sectional drawing. The firebox wrapper plate is of Kuprodor copper with Kuniclad stay bolts fitted to the lower portion of each side plate and the tube plate. As seen, the clothing plates of the boiler are tapered at the top portion, giving the now familiar truncated appearance as between the boiler barrel and the firebox covering. The crown plate of the firebox is directly stayed to the wrapper plate with two rows of flexible staybolts at the front end. Two 3-in. dia. Ross pop safety valves are mounted upon the firebox, set for a pressure of 225 lb. per sq. in. Special fittings include an Alfloc automatic continuous blow-down valve. The boiler is fed by two Gresham & Craven 10-mm. injectors.

The principal dimensions are as follow:—

Cylinders (3), dia.	18½ in.
Piston stroke	28 in.
Piston valves, dia.	9 in.
Lap of valves	1½ in.
Lead	¼ in.
Exhaust clearance	Nil
Maximum travel of valve	6½ in.
Wheels, coupled: dia.	6 ft. 7 in.
" bogie	3 ft. 0 in.
" tender	3 ft. 9 in.
Wheelbase: bogie	7 ft. 8 in.
" coupled	15 ft. 9 in.
" total	28 ft. 11 in.
Boiler, heating surface: firebox	200 sq. ft.
" tubes	1,670 sq. ft.
" total (evaporative)	1,870 sq. ft.
Heating surface superheater	468 sq. ft.
Heating surface, combined total	2,338 sq. ft.
Working pressure per sq. in.	225 lb.
Grate area	33.5 sq. ft.
Tractive effort at 85 per cent. b.p.	33,000 lb.

The frames of the engine, bogie and tender, are made of Ducol high-tensile steel plates. The engine frames are 1½ in. and those of the bogie and tender 1 in. thick. An interesting feature of the design of these locomotives is

the liberal use made of anti-friction bearings. The valve motion incorporates ball bearings fitted to the return crank and needle roller bearings to the quadrant link trunnion and the eccentric rod ends. The engine bogie is fitted with inside roller bearing axleboxes, and those of the tender wheels also have roller bearing axleboxes. A 12-feed Wakefield mechanical lubricator is used for supplying oil to the cylinders and valves, and a Silvertown lubricator with the same number of feeds for the axleboxes, slide bars, and other points. The engine and tender are fitted with vacuum brake apparatus.

In working order the engine weighs 84 tons and the tender 51 tons, giving a total weight, engine and tender in working order, of 135 tons. The adhesion weight is 63 tons; and the factor of adhesion 4.3. The tender is of the 6-wheeled type and has a capacity of 5,000 gal. of water and 8 tons of coal. The tank is constructed of Dalzo rustless steel. The engine cab is of commodious pattern, being 9 ft. wide inside and fitted with sliding windows at the sides. A screen-wiper is fitted to the window on the driver's side. The engines are being painted in blue-green, picked out with black and yellow lining.

The following firms supplied material and special fittings:—

Ducol steel for frames	Colvilles Limited
2 per cent. nickel plate (boiler)	
Dalzo rustless steel plate	
Kuprodor firebox plates	I.C.I. Metals Limited
Tube bushes	
Multiple regulator header and elements	Superheater Co. Ltd.
Ball and needle roller bearings	Hoffmann Mfg. Co. Ltd.
Silvertown mechanical lubricator (for axleboxes, &c.)	Gresham & Craven Limited
Window screen wiper	
Superdreadnought ejectors	
Injectors (10 mm.)	
Mechanical lubricator (for cylinders and piston valves)	C. C. Wakefield & Co. Ltd.
Beclawat sliding windows	Beckett, Laycock & Watkinson Limited
Alfloc automatic continuous blow-down valve	Alfloc Limited

International Use of Rolling Stock

ENQUIRIES reach us from time to time as to the meaning of the rectangular panels of letters on main-line passenger rolling stock on the principal Continental railway systems. More than once we have made reference to this subject and have listed the symbols indicating the railways over which the vehicles are permitted to run, and in view of recent changes in certain of these markings, we now append a revised list.

The international use of coaching stock on the European Continent is governed by the rules of the R.I.C. (Regolamento Internazionale Carozze). Only coaches bearing the three letters RIC may run over the lines of all the railway administrations that are party to the agreement. The large majority of European rolling stock, however, does not fall within this comprehensive category, and it is therefore necessary to inscribe on every coach, in addition to "RIC," initials indicating the particular systems over which it may run. These initials are usually to be found on the solebar of the vehicle. Below is a complete list of these R.I.C. codes, as revised on October 1, 1938. It will be noticed that France is divided into six categories, "F" standing for all railways, and "F" followed by a numeral designating the various regions generally corresponding to pre-nationalisation systems. It will also be observed that a simplification of the symbols has been effected since we last published this list (in our Inter-

national Railway Congress Association Supplement of May 21, 1937, p. 28).

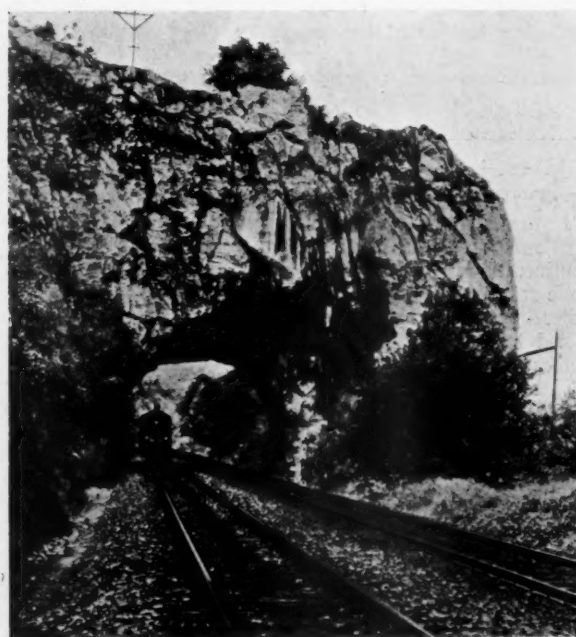
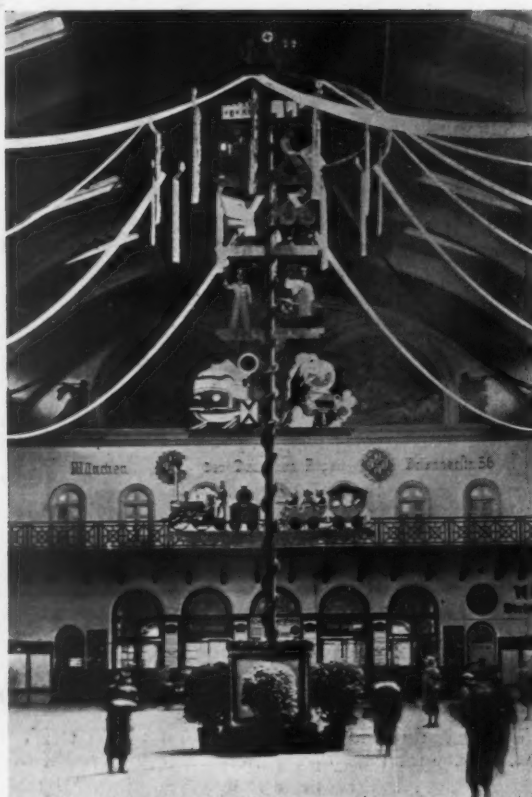
Country	Railway	Symbol
Belgium	Belgian National Railways	B
Bulgaria	Bulgarian State Railways	BG
Czecho-Slovakia	All systems	CS
Denmark	Danish State Railways	DK
France	French National Railways—	
	All lines	F
	Eastern (late Est and A.-L.)	F1
	Northern	F2
	Western (late Etat)	F3
	South-Western (late P.O.-Midi)	F4
	South-Eastern (late P.L.M.)	F5
Germany	All systems	DR
Greece	All systems	GR
Holland	All systems	NS
Hungary	Hungarian State Railways	H
Italy	All systems	It
Jugoslavia	Jugoslav State Railways	J
Latvia	Latvian State Railways	LD
Lithuania	Lithuanian State Railways	LG
Norway	Norwegian State Railways	N
Poland	Polish State Railways	PL
Roumania	Roumanian State Railways	R
Sweden	All systems	S
Switzerland	All systems	CH
Turkey	Turkish State Railways	TC

SCENES ON THE GERMAN STATE RAILWAY

Reproduced from the Reichsbahn Kalender, reviewed in our issue of January 27

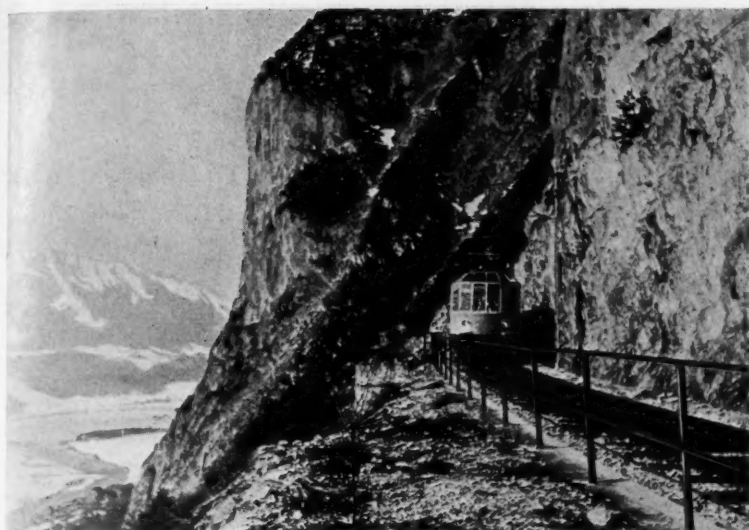


Electric train on the Brenner line, near Innsbruck



Above: Scene near Etterzhausen on the line from Regensburg to Nuremberg

Left: Munich station decorated with a maypole for May Day celebrations



Left: "Glass train" on the electrified line between Munich and Innsbruck; view from railway down into valley of the Inn



Right: Restoring and relaying damaged lines in Sudetenland



Left: Train entering station at Oberstdorf, a Bavarian winter sports resort served by a branch leaving the Munich-Lindau line at Immenstadt



Part of the top table at the Railway Benevolent Institution dinner at the Connaught Rooms, London, on March 23 (reported in our March 31 issue). Dr. Leslie Burgin, Minister of Transport, is standing [Swaine]



Some of the gathering at the annual dinner of the Railway Convalescent Homes at the Wharnccliffe Rooms, London, on March 29 (see our issue of March 31). Lord Horne presided, and is seen among those standing at the top table [Rawood]



Scene at the annual dinner of the Institution of Locomotive Engineers at the Trocadero Restaurant, London, on March 31 (see report in our April 7 issue). Dr. Leslie Burgin, Minister of Transport, was the principal guest [Swaine]

RAILWAY NEWS SECTION

PERSONAL

Mr. Theodore Eastaway Thomas, the General Manager (Operation) of the London Passenger Transport Board, has accepted the presidency of the Institute of Transport for the year beginning on October 1, 1939. Mr. Thomas, who is a Foundation Member of the institute, served as a Member of Council from 1930 to 1932, and from 1935 to 1936, and as a Vice-President from 1932 to 1935.

He was educated at Rugby School, Corpus Christi College, Cambridge, and Princeton University (U.S.A.). At Cambridge he obtained an Honours Degree (2nd class honours in Classical Tripos, Part I, and first class honours in Historical Tripos, Part II), also the Davison Scholarship to Princeton University (U.S.A.), 1925-1926. He left Cambridge in June, 1927, and entered the service of the Underground group of companies immediately afterwards. Beginning in the Chairman's Office, he

London Regiment. He was mentioned in dispatches and was awarded the silver Medaille d'Honneur by the French Government. Mr. Scothorne joined the London County Council Tramways Department in 1919 as Statistical Assistant, and he became Development Superintendent in 1925. On his transfer to the board in 1933 he was appointed Assistant Development Superintendent. In 1936 he was made Assistant Public Relations Officer, London Transport.



Mr. John Cliff

Appointed Head of Staff Department, L.P.T.B.



Mr. W. P. N. Edwards

Appointed Public Relations Officer, L.P.T.B., jointly with Mr. F. Scothorne



Mr. F. Scothorne

Appointed Public Relations Officer, L.P.T.B., jointly with Mr. W. P. N. Edwards

Mr. John Cliff, who, as announced in our issue of April 7, has assumed charge of the Staff Department of the London Passenger Transport Board as from April 3, has been associated for a number of years with the trade union side of transport and became Assistant General Secretary of the Transport & General Workers' Union. He held this office until 1933 when, upon the formation of the London Passenger Transport Board, the appointing trustees nominated him to serve as a part-time member of the board for a term of five years beginning on May 18, 1933; this was renewed in May, 1938. In addition Mr. Cliff has undertaken various duties in connection with complicated staff matters and conditions of service relating to the various staffs acquired by London Transport on its formation and subsequently.

Mr. W. P. N. Edwards, whose appointment as Public Relations Officer, London Passenger Transport Board, jointly with Mr. Scothorne, was recorded in our April 7 issue, was born in 1904.

was Secretary to the Chairman from January, 1931, to February, 1937, and Secretary to the Standing Joint Committee of the board and the main-line railway companies from its establishment in July, 1933, to January, 1939. In February, 1937, he was appointed an Officer of the board and was transferred from the Chairman's Office to the Operating Department, Railways, when he held the position of Personal Assistant to the General Manager, Railways (Mr. J. P. Thomas) until Mr. Thomas's retirement in June, 1938; subsequently he was appointed Assistant Outdoor Superintendent.

Mr. F. Scothorne, who, as recorded in our issue of April 7, has been appointed Public Relations Officer, London Passenger Transport Board, jointly with Mr. W. P. N. Edwards, is a native of Nottinghamshire. He was educated at Mansfield Grammar School and entered the service of the London County Council in 1903 under Sir Edgar Harper, then Statistical Officer. During the whole of the war he served with the 9th Battalion,

The Hon. B. W. Hawke has been elected to the boards of the Leopoldina Railway Company, and the Leopoldina Terminal Company.

Sir Henry Chapman, who is Resident Director in Africa of Rhodesia Railways Limited, has joined the board of the Trans-Zambesia Railway Company.

Mr. C. T. Hurry Riches, M.I.Mech.E., whose retirement on April 6 from the position of Divisional Locomotive, Carriage & Wagon Superintendent, Cardiff, G.W.R., was recorded in our March 31 issue, served his pupilage at West Yard, Taff Vale Railway. He won an engineering scholarship at the University of South Wales, and later took up an appointment as Assistant Works Manager of the firm of Browett, Lindley. Subsequently Mr. Riches became an inspector with Messrs. Rendel & Robertson (now Messrs. Rendel, Palmer & Tritton), consulting engineers for the Indian State Railways, leaving there to take up the position of Assistant



Mr. C. T. Hurry Riches

Divisional Locomotive, Carriage & Wagon Superintendent, Cardiff Valleys Division, G.W.R., 1922-39

Works Manager in the Locomotive Department of the Great Central Railway at Gorton works. Mr. Hurry Riches was in 1906 appointed Locomotive, Carriage & Wagon Superintendent of the Rhymney Railway, which, at the grouping of the railways in 1922, became part of the Great Western Railway. Shortly after the grouping, he was appointed Divisional Locomotive Superintendent of the Cardiff Valleys Division. He is a Past-President of the Locomotive Association of Great Britain and Ireland, and Chairman of the Engineering Advisory Committee of the Technical College, Cardiff. For many years Mr. Riches has been interested in St. John Ambulance work, and holds the Great Western Railway Company's long-service gold medal and bar. He is a Commander of the Order of St. John of Jerusalem, and a Member of Chapter, and has served on various committees of the Priory for a number of years. Mr. Hurry Riches is



Mr. W. H. Bodman

Appointed Divisional Locomotive, Carriage & Wagon Superintendent, Cardiff Valleys Division, G.W.R.

a well-known personality in South Wales, and enters upon his retirement with the good wishes of a host of friends.

Mr. W. H. Bodman, A.M.I.Mech.E., who as recorded in our March 31 issue, has been appointed Divisional Locomotive, Carriage & Wagon Superintendent of the Cardiff Valleys Division, G.W.R., in succession to Mr. Hurry Riches, began his apprenticeship to fitting, turning, and erecting in the Swindon locomotive works in 1908. After passing through the various shops and the testing house, he was transferred to the drawing office in 1913. Early in 1915 he joined His Majesty's Forces and served two years overseas with the 504th Field Company, Royal Engineers. After demobilisation in February, 1919, Mr. Bodman returned to the drawing office, and in August, 1922, he was transferred to Neath as assistant to the Locomotive, Carriage



Mr. J. C. Bowyer, O.B.E.

Who has recently retired after 50 years' service with the Railway Clearing House

& Wagon Superintendent. In January, 1936, he was appointed Assistant Locomotive, Carriage & Wagon Superintendent, Cardiff Valleys Division.

Mr. J. C. Bowyer, O.B.E., whose recent retirement from the service of the Railway Clearing House was recorded in our issue of March 31, entered the Clearing House in 1888, and had therefore completed over 50 years' service. During the war he served in the Coal Control Department, and subsequently went to the Ministry of Transport. In 1921 he resumed his duties at the Clearing House to take charge of the Coaching Accounts. The next year he was appointed to assume charge of the Goods Department, and held that office until it was merged with the Coaching Department in 1936, becoming the first chief of what was then designated the Traffic Department. For his national services Mr. Bowyer was awarded the



Dr. Leslie Burgin, Minister of Transport, photographed at various stages of his L.M.S.R. footplate adventure on March 28 (see our March 31 issue). In centre: Lord Stamp makes a sartorial adjustment



O.B.E. As a mark of esteem, and in recognition of his ready help and co-operation over many years, the accountants of the railway companies made a presentation to Mr. Bowyer on March 28.

From *The London Gazette* of April 11: Territorial Army, Royal Engineers, Engineer & Railway Staff Corps: Colonel Sir Ralph Wedgwood, Kt., C.B., C.M.G., T.D., resigns his Commission and is re-granted the rank of Brigadier-General, with permission to wear the prescribed uniform (March 3).

Mr. P. L. Fleming has been appointed a Director of the Nitrate Railways Co. Ltd. in place of Mr. W. J. Welch, who has decided to restrict his business activities and has resigned.

We regret to record the death on April 5 of Mr. E. W. Fraser-Smith, Secretary and Treasurer of the North East Coast Institution of Engineers and Shipbuilders, who died early on the morning of April 5. He had been Secretary and Treasurer of the institution since the latter part of 1911.

L.M.S.R. APPOINTMENTS

The following appointments have been approved by the directors:—

Mr. F. Everitt, Assistant to District Engineer, Crewe, to be District Engineer, Crewe.

Mr. J. K. Wardle, Assistant to District Goods, Passenger & Docks Manager (Docks), Barrow, to be Assistant Dock Superintendent, Garston Dock.

Mr. G. E. Staves, Clerk (Docks Section) Chief Commercial & Chief Operating Managers' Office, Euston, to be Assistant to District Goods, Passenger & Docks Manager (Docks), Barrow.

Mr. G. F. Distin, Chief Clerk, Bristol (St. Philips), to be Joint Goods Agent, Cheltenham (L.M.S. & G.W.).

Mr. A. J. Holton, Head Office Inspector (Staff) Chief Commercial & Chief Operating Managers' Office, Derby (located at Euston), to be Station-master, Liverpool (Lime Street).

Mr. B. J. Perkins, District Controller, Patricroft, to be District Controller, Heaton Norris.

Mr. H. Heyes, District Controller, Rowsley, to be District Controller, Patricroft.

Mr. R. Bagwell, Chief Passenger Trains Clerk, Office of Divisional Superintendent of Operation, Crewe (located at Euston), to be District Controller, Rowsley.

Mr. I. E. Mercer, District Locomotive Superintendent, Wellingborough, to be District Locomotive Superintendent, Toton.

Mr. E. M. Ambler, Assistant District Locomotive Superintendent, Toton, to be District Locomotive Superintendent, Wellingborough.

Mr. E. C. Bourne, Running Shed Foreman, Mirfield, to be Assistant District Locomotive Superintendent, Toton.

Major H. C. Henry, Deputy Chairman of the Great Southern Railways, Eire, who has also been Deputy Governor for the past two years of the Bank of Ireland, has been elected Governor of that bank for the ensuing year, in succession to Mr. H. B. Pollock (also a Director of the Great Southern Railways).

L.N.E.R. APPOINTMENTS

The L.N.E.R. announces that the following appointments have been made:—

Mr. C. K. Bird, Assistant Goods Manager, Southern Area, to be Assistant Divisional General Manager, Southern Area, in succession to Mr. A. Oldham, who will retire from the service under the age-limit on April 29.

Mr. T. R. Hawkes, Chief Mechanical Engineer's Office, King's Cross, to be Locomotive Accountant, Scottish Area, in succession to Mr. J. Inglis, who retires under the age-limit on April 22.

Mr. H. G. Nicholls has been appointed Assistant Manager in the Government & Railways Department of the General Electric Co. Ltd. He joined the G.E.C. in 1892 and entered his present department during the great war. Mr. Nicholls succeeds Mr. R. C. Giggins, who was recently appointed Manager of the department after the death of Mr. W. E. Maddams.

S.R. DOCKS AND MARINE DEPARTMENT

We are officially informed that the directors of the Southern Railway have made the following appointments in the Dock and Marine Department:—

Mr. D. McQueen, Superintendent Mechanical Engineer, Dover, to be Superintendent Marine Engineer, Southampton, in succession to Mr. W. A. Graham, whose retirement we recorded in our issue of March 24.

Mr. A. G. Liston, Assistant to Superintendent Engineer, Southampton, to be Assistant Marine Engineer, Southampton.

Mr. R. Stewart, Chief Engineer (Passenger) to be Assistant Marine Engineer, Dover.

LOCOMOTIVE ENGINEERS AWARDS

At the annual dinner of the Institution of Locomotive Engineers on March 31 (reported in our April 7 issue) the following awards for papers presented during the 1937/8 session were announced:—

The Frederick Harvey Trevithick Prize.—Awarded to Mr. D. C. Brown, Member, for his paper entitled "Counterbalancing and Its Effect on the Locomotives and on the Bridges."

The Gold Medal of the Institution.—Mr. M. M. Loubser and Mr. E. S. Cox, members, for their joint paper, "Locomotive Boiler Design, Theory and Practice" (two gold medals were awarded).

The Alfred Roslin Bennett Award.—Mr. A. F. Webber, Associate, for his paper entitled "The Proportions of Locomotive Boilers."

Special Prize for Graduates.—Awarded to Mr. W. Boyle, Scottish Centre.

Forthcoming Events

Apr. 11-15.—Model Railway Exhibition, at Central Hall, Tothill Street, London, S.W.1.

Apr. 14 (Fri.).—Institute of Transport (Newcastle), at Royal Station Hotel, 7.30 p.m. Annual General Meeting.

Institute of Transport (Newcastle Graduate), at Royal Station Hotel, 6.30 p.m. Annual General Meeting.

Apr. 15 (Sat.).—Stephenson Locomotive Society (London), 2.30 p.m. Visit to Willesden, L.M.S.R., and Old Oak Common, G.W.R., Running Sheds.

Apr. 18 (Tues.).—Institute of Transport (London), at Inst. of Electrical Engineers, Savoy Place, W.C.2, 6 p.m. "Indian Railways: an Outline of their History and Development," by Mr. L. Kirkness.

Apr. 19 (Wed.).—Institution of Locomotive Engineers (London), at Inst. of Mechanical Engineers, Storey's Gate, S.W.1, 6 p.m. "Review of Electric Traction in England," by Mr. W. Agnew.

Institution of Railway Signal Engineers, at Exchange Hotel, Liverpool, 6 p.m. "Electric Lamps for Railway Signalling," by Messrs. J. Fowler and P. Sturges.

Apr. 20 (Thurs.).—L.N.E.R. Musical Society, at Hamilton Hall, Liverpool Street, London, E.C.2, 6.30 p.m. Dinner-Dance.

Apr. 21 (Fri.).—Institute of Transport (East Midlands), at Guildhall, Nottingham, 7 p.m. Annual General Meeting.

Institute of Transport (Manchester-Liverpool), at Queen's Hotel, Manchester, 6.30 p.m. Annual General Meeting.

Supplementary Reserve Camp Dates—1939

The dates for camps at Longmoor of the various railway companies of the Supplementary Reserve during the coming summer will be as under:—

Unit	Date in Camp
H.Q. Rly. Op. Group, R.E. (S.R.)	May 30–June 13.
153rd (L.N.E.) Rly. Op. Co., R.E. (S.R.)	
154th (G.W.) Rly. Op. Co., R.E. (S.R.)	
No. 1 Movement Control Group, R.E. (S.R.)	
No. 1 Docks Group, R.E. (S.R.)	June 14–June 28.
No. 2 Docks Group, R.E. (S.R.)	June 29–July 13.
151st (G.W.) Rly. Con. Co., R.E. (S.R.)	July 14–July 28.
155th (L.M.S.) Rly. W'shop. Co., R.E. (S.R.)	
No. 2 Movement Control Group, R.E. (S.R.)	
150th (L.N.E.) Rly. Con. Co., R.E. (S.R.)	August 9–August 23
No. 3 Movement Control Group, R.E. (S.R.) Provisional	
No. 2 (L. of C.) Signals (S.R.)	August 24–September 7
152nd (G.W.) Rly. Con. Co., R.E. (S.R.)	
H.Q. Transportation Stores Group, R.E. (S.R.)	
156th (S. Transportation Stores Co., R.E. (S.R.)	

Permanent Way Metallurgy

Some metallurgical considerations bearing on the manufacture and use of the various components of railway permanent way and the tools used in its maintenance

Under the chairmanship of Mr. B. P. Fletcher, District Engineer, Stratford, L.N.E.R., a lecture of wide scope was given on Wednesday, April 5, to the London Section of the Permanent Way Institution by Mr. T. Henry Turner, M.Sc., Chief Chemist and Metallurgist, London & North Eastern Railway, with the above title. Beginning with a description of laboratory methods used in the examination of metallurgical samples submitted to him, Mr. Turner went on to describe the manufacture and metallurgical properties of rails, fishplates, chairs, steel sleepers, water mains, bolts and nuts, wire, structural steel, and tools; he illustrated the various points made, particularly those concerning rail welding, rail wear, rail defects, and the building up of worn rails, with a large number of photomicrographs and prepared rail specimens, collected over a number of years, that he may well claim to be unique. The work for the most part has been carried out at the Doncaster Metallurgical Laboratory of the L.N.E.R., which is particularly well equipped for this purpose.

Steel Rails

In discussing the steel rail, Mr. Turner gave it as his opinion that the ideal rail of the future is one of medium carbon medium manganese composition which has been subjected to heat treatment; and with suitable heat treatment he regarded the use of alloying elements as unnecessary. Examples were shown in which hardness up to that of the German Maximilianshütte martensitic rail had been produced by the Sandberg sorbitic plant, which he regarded as fully adequate for all heat treatment requirements. He also revealed himself as a strong advocate of welding rails into the longest practicable lengths, and by the flash-butt in preference to any other method of welding, as in his judgment flash-butt welding gives a structure throughout the zone of the weld that is more uniform than with other processes, whether post-heating be applied to the weld or not. Corrosion of rails was dealt with, an interesting example being cited in which the corrosion of a single rail in a certain damp tunnel had been three times as rapid immediately under a ventilating shaft, owing to condensation of locomotive exhaust and precipitation of weak sulphuric acid on the rails at the point, as it was along the remainder of the same rail. Experiments on the L.N.E.R. had shown that in tunnels where corrosion losses were severe, painting of rails had proved valuable

as a protection, as had also spraying with zinc or aluminium.

Reference was made to the practice of quench-hardening the noses of crossings at railway switch and crossing works, and Mr. Turner gave it as his opinion that in general there is not as precise control over these operations as the high quality of the rail deserves, no less than the stresses that must be sustained in service by these important track components. He suggested that in the future crossing points might be heated up in a salt bath, quenched in oil, and tempered in a second salt bath. As regards the building up of worn noses and wing-rails, the lecturer favoured the addition of alloy steel by oxy-acetylene heating and hammering rather than electric welding, as although satisfactory results can in certain conditions be obtained with the latter, the extra heat and lower temperature of the oxy-acetylene process help to eliminate internal stress due to rapid cooling, and the hammering tends to solidify the deposit.

Fishplates, Chairs, and Sleepers

In dealing with fishplates, Mr. Turner described how examination of a number of plates from different works had revealed an unexpected variety of microstructure, even though the plates in general were within the limits of analysis and physical test laid down in the standard specification. Certain of the plates showed excessive decarburisation, and evidence of over-heating, which was attributed to the small furnaces in which at most works the plates are now re-heated prior to punching. Using the analogy of the care that is now bestowed on the proper heat treatment of all the steel components of the modern motorcar, the lecturer claimed that not only fishplates, but also fishbolts and nuts should be oil-quenched as a matter of course, in order to reduce their liability to fracture under ordinary service stresses.

Cast iron chairs were dealt with, but no particular recommendations were made as to variations in present chair practice. In discussing the relative merits of wood and steel sleepers, Mr. Turner gave some interesting figures concerning the use of steel sleepers abroad. Metal sleepers were first introduced in Germany about 1870, and that country has 39 per cent. of its tracks so laid, reckoning on a life of 15 to 20 years in special or first-class lines, then a further 20 years in second class track, and finally up to 10 years more in sidings. The Swiss Federal Railways began to use steel sleepers in 1883, and the present sleepers have an

average life in running lines of 32 years, after which they are used again in sidings. In Switzerland the life of steel sleepers in running lines is estimated as 50 per cent. longer than wood sleepers, and the cost, including fastenings, is materially less than that of wood sleepers. In this country, however, climatic and commercial considerations point to the conclusion that the use of steel sleepers, for the present at least, is not likely to increase in Great Britain.

As to water mains, the centrifugally cast or "spun" cast iron pipe, which is now coming widely into use, was preferred to the vertically cast pipe, but proper annealing is necessary to prevent cracking during handling or transport. Examples were shown in which a simple treatment of water passing through steel or wrought iron pipes had greatly reduced corrosion troubles.

Corrosion of Wire and Structures

A section of the paper was devoted to wire, of which a number of different varieties are used by engineering departments, chiefly in connection with signals and telegraphs. Samples of signal and stay wire which had been examined showed considerable variation in the thickness of their zinc coatings, though in all cases the specified Preece test (by dipping in a saturated solution of copper sulphate) could be satisfied. Mr. Turner considered that all such steel wires should contain from 0.25 to 0.50 per cent. of copper as a corrosion resistant, that solid in preference to stranded wires should be used where possible, and that zinc coatings should be painted regularly. The same emphasis on copper content and on adequate painting was shown in connection with structural steels. Thorough preparation is the first essential; wire brushing the surfaces to be painted is not enough, but where possible sand or shot blasting or acid pickling is desirable for the removal of the scale. Thereafter the surface to be protected should receive two coats of red lead, which is the best rust inhibiting coating of any, and subsequent painting should be regarded in its turn as a protection of the red lead. Welded structures should have a longer service life before repainting becomes necessary, because of the absence of rivet heads and the fewer corners in which moisture can lodge. For the same reason it is worth while to fill in all right-angled corners with putty before the painting takes place, and the wrapping with zinc tape of plates specially subject to corrosion, on account of their location, might be worth a trial. As an example of very thorough initial painting which has justified the time and cost involved, Mr. Turner instanced the Queen Alexandra bridge over the Wear at Sunderland, on which the first red lead and barytes priming coat and bridge green upper coat are still 90 per cent. intact after eighteen years, only patch painting having been needed during this

period over the remainder of the structure.

Tools

The paper contained some reference to permanent way tools. Hammers have been examined metallurgically, owing to breakages which have taken place in railway service, and the result has been to disclose some dangerously hard conditions in hammer-heads. In consequence, deliveries of hammers now

come under systematic examination. As to the shovels which are used in such large quantities in permanent way and other work, Mr. Turner suggested that, despite the initial cost, the lightening of a shovel which would take place if Staybrite or some similar steel were used in its manufacture would be more than justified by the increased work that would be possible with it and its longer life.

In conclusion he suggested the

establishment by the four main-line companies and the London Passenger Transport Board of a joint permanent way materials laboratory and information bureau. A precedent has already been created by the joint L.M.S.R. and L.N.E.R. locomotive testing station now under construction at Rugby, and similar joint research on permanent way, even if expensive, might well prove profitable to the promoters in the long run.

Refrigeration on Railway Rolling Stock

Recently Monsieur J. B. Verlot presented a paper entitled "Refrigeration in Railway Rolling Stock" to the British Section of the Société des Ingénieurs Civils de France. The author confined himself to French practice and stated that prior to the great war there had not been felt any need for the transport of perishables over long distances, because most of the food needed in any district had been derived from small holdings in the immediate vicinity. Agricultural production had, however, been badly disorganised by the war and great armies in the north had presented a special problem in victualling, so that it had become necessary to import frozen meat from abroad.

By 1915 the need for insulated vans had become urgent, and by 1920 the number of these had grown to 1,630, of which, however, fewer than 300 were fitted with ice boxes to provide additional refrigeration in transit. Of a large number of American vans purchased during the war, as many as 400 still remained in service. The three railways interested in refrigerated transport, namely the Orleans, the P.L.M., and the État, had finally come to the conclusion that the responsibility for, and organisation of, this form of transport were matters which could best be attended to by separate and independent companies, and thus there were three such companies in France at the present time. These were:—

La Compagnie de Transports Frigorifiques (the C.T.F.).—Covering the Orleans and Midi lines, bringing them the traffic from or to Spain as well as that of North Africa via Bordeaux and Port-Vendres.

La Société de Transports et Entrepôts Frigorifiques (the S.T.E.F.).—Covering the whole of the P.L.M., Est, Nord and A.L. lines, and providing transport from and to Switzerland, Germany, Belgium, England, the Scandinavian countries and the North African traffic via Marseilles.

La Société d'Exploitation des Wagons Frigorifiques des Chemins de Fer de l'État (the S.E.F.).—Belonging to the State and covering State lines as well as part of the traffic from and to England.

The amalgamation of the French railways into one national company would shortly modify the position of these three companies.

The organisation of low temperature transport took two forms. First, vans were incorporated as a regular feature in daily trains and were either opened for loading and unloading only at the terminal stations, or made to serve as collectors from several stations and as

distributors to others. Secondly, they were privately hired either for single journeys or for certain periods of time. During 1938 the goods transported by insulated or refrigerated trucks totalled 800,000 tons. The present number of vans was 1,848 insulated, 1,311 refrigerated, and 46 milk tanks. All the recent types of vans and the older ones that had been modernised were provided with Flettner ventilators to stir the cold air within, thus obviating any risk of heat pockets forming between packages of perishables.

The choice of a suitable insulating material presented difficulties. Peat, granulated cork, cork shavings, compressed straw, and glass silk had been given up in favour of expanded cork and seaweed. Alfal, kapok, and Celotex were being tested, but were rather expensive for general adoption. The general rule for insulation thickness with seaweed or expanded cork was 15 cm. for the sides and 20 cm. for the roof. Metal connections between inside and outside walls were avoided as these conducted heat, and pneumatic rubber tubing was used to make the closing of the doors quite airtight. In the latest vans the body consisted of two damp-proof metallic shells separated by three layers of seaweed and attached to one another by oak members. The inner shell was fabricated by welding; the outer one was made by riveting panels together.

For providing refrigeration the usual method was to carry ice. Experiments were proceeding with the use of Drikold or carbonic acid, and a limited use was made of mechanical refrigeration, as for instance in the summer transport of butter over 500 to 600 km. in vans that were opened many times at the outset for collecting it. The methyl chloride compressor was axle-driven and could operate with the van running in either direction. Also operating on the French railways was the Altek car, which had automatic controls and did not require supervision.

The need for precooling the vans was met in some instances by loading up with ice some hours before they were due to receive their freight of perishables. However, the more usual plan now was to employ an outside mechanical refrigeration plant, either to cool the goods before putting them in the vans, or to blow cold air into the loaded vans to accelerate the attainment of the tem-

perature required during transit. The mechanical refrigeration plant was usually a large stationary one, but in districts with only a small amount of refrigerated transport a mobile plant, i.e., one carried in a special railway vehicle, had been found useful. In a typical fixed plant at Avignon, capable of refrigerating six vans simultaneously, were a centrifugal ventilating fan for sending cooled air to these vans and a compressor plant which used brine as the vehicle for abstracting heat from the air. Pre-cooled cars were loaded with ice blocks which arrived on toboggans down specially designed slopes.

Two mobile installations were in use and these went from district to district. Each had a 20-h.p. diesel engine driving an ammonia compressor and also a large air-circulating fan. Air transport was effected by well-insulated rigid piping supported by a mobile gantry. A mobile plant could cool two vans at a time, the necessary time being 12 hr. in an actual case.

Transport in refrigerated containers was little used in France and its development was not being contemplated. Cold storage stations to receive perishables in bulk after transport in the season of production, and to hold such perishables back from a glutted market, were already being provided, and three such stations played an important part in the feeding of Paris. The Paris-Ivry station could receive six thousand tons of frozen meat or four to five thousand tons of other produce. Adjoining it was an ice factory, the output from which was partly used for cooling the vans.

AN L.N.E.R. NAMING CEREMONY.—On April 3 at York station a new L.N.E.R. locomotive of the "Green Arrow" class, numbered 4818, was named "St. Peter's School, York, A.D. 627" by the head boy of the school, J. T. Brockbank. Mr. C. M. Jenkin Jones, Divisional General Manager, L.N.E.R., said that it seemed appropriate that the oldest school in England should have its name commemorated by a locomotive built by the oldest railway company in the world. Mr. C. Stedman, Locomotive Running Superintendent, presented the headmaster of St. Peter's, Mr. J. Dronfield, with an iron copy of the nameplate which will be hung in the school. Driver A. Winn and Fireman A. E. Malton, who manned the locomotive, were presented by Mr. Dronfield with silver cigarette cases, suitably inscribed,

Staff and Labour Matters

Decision of Railway Staff National Tribunal

A delegate conference of the National Union of Railwaymen met in London on April 3 and 4 to consider Decision No. 5 of the Railway Staff National Tribunal. The conference, by a large majority of 63 votes to 15, carried a resolution rejecting the award.

The delegates then had two propositions to consider: (1) To issue an ultimatum to the railway companies calling for the 50s. minimum to be applied, strike action to be taken failing compliance within 28 days; and (2) a somewhat similar motion, but including, in addition to the 50s. minimum wage, the abolition of spread-over of duties, and fixing no time limit for strike action to be taken. The majority of the delegates, however, was opposed to attaching a strike threat to the decisions, and defeated both these proposals. A straight resolution was then carried instructing the executive immediately to approach the railway companies for the granting of the 50s. adult minimum wage.

When the claim for a minimum rate of 50s. a week for all adults in conciliation grades was before the Railway Staff National Tribunal, it was estimated to cost £1,087,000 per annum, and the companies estimated the cost of extending the minimum rate of 50s. to grades not before the tribunal as £1,479,000, making a total estimated cost of £2,566,000. A delegate conference of the Associated Society of Locomotive Engineers and Firemen met in London on April 4 and 5, to consider the decision of the tribunal, and on the first day of the conference rejected the tribunal's findings. On the second day of the conference the delegates considered what further action should be taken, and they decided to re-open negotiations with the railway companies on the whole of the claims which the society submitted to the Railway Staff National Tribunal.

Irish Railway Wages Board

At the meeting of the Irish Railway Wages Board on March 31, the Chairman, Judge Wylie, K.C., explained that in April of last year $1\frac{1}{2}$ per cent. of the July, 1938, cut of $2\frac{1}{2}$ per cent. was restored, and the decision of the board then was that the remaining $1\frac{1}{2}$ per cent. should be restored on January 1, 1939. However, owing to its financial position, the Great Southern Railways Company applied in October last for a further cut and the alteration of the previous decision. The result of the application was that the restoration of the $1\frac{1}{2}$ per cent. cut which was to have taken place in January of this year, was postponed until the matter was further considered in March. The Chairman said that the only matter before the board was the question of the restoration of this $1\frac{1}{2}$ per cent. cut, and he could not hear the Great Southern advocate (Mr. P. J.

Floyd) on anything but the question of postponement or not of this $1\frac{1}{2}$ per cent. There was no application for a reduction of wages before them. Judge Wylie said that he knew there was a transport tribunal sitting to report on the question of transport in Eire, and he was rather adverse to doing anything at the Wages Board pending the decision of that tribunal. It would be a mark of disrespect to the tribunal, and he was inclined to think that the *status quo* should be maintained. Having retired into private session the board decided that the restoration of the cut be further postponed until a meeting to be held between September 30 and November 30. Mr. O'Farrell (Railway Clerks' Association), when speaking to the Court, stated that his association realised that its interests and those of the company were identical, and consequently offered no objection.

Railway Shopmen

The Railway Shopmen's National Council meeting in London yesterday failed to reach agreement on the claims submitted by the employees to the council and it was decided to submit the difference to arbitration before the Industrial Court on Agreed Terms of Reference.

Parliamentary Notes

Railways and Civil Defence

Dr. Leslie Burgin (Minister of Transport), speaking in the Second Reading debate on the Civil Defence Bill, referred to the provision of hospital trains and hospital transport. He said that arrangements had already been made for ambulance trains by the conversion of certain parcel vans. Those arrangements had been made by the railway companies, and for road transport by Green Line coaches which had already been adapted. The arrangements for these trains and for their preparation, assembly and availability had been made by the competent railway authorities, and they had been formulated with due regard to all the demands on the railways for other purposes. He had no doubt that all those matters had been taken into account. As regarded actual pressure on railways and roads, the Government must be guided by the circumstances of the moment. Referring to Clause 31 of the Bill, which deals particularly with the railways, he said that a satisfactory working arrangement with the main-line railways had been evolved and very large sums of money had been expended. The railways had magnificently appreciated their responsibility, and tremendous works on a very large scale had already been put into practical construction. They were of various kinds which it was impossible to summarise in a few moments. The requirements of the four main-line railways and of the London Passenger Transport Board entailed an expenditure under the various headings which

ran into millions. The object was to enable vital points to be duplicated in case of necessity and to deal with the obscuration of light. Internal lighting was quite an easy matter to arrange, but external lighting gave rise to difficulties in places like marshalling yards and great areas of goods assembly. It was difficult to arrange a form of lighting which would throw the light down and yet not be visible from the air, and the matter required a great deal of expenditure. There was also the question of camouflage. Wherever repainting had to be done in railway work it took the form of painting which should, as far as possible, render the particular work less visible from the air. The arrangement with the railway companies was set out in Clause 31, and provided that the railway companies made that expenditure, and that they would be controlled by the Government from the moment of the outbreak of war. After that taking over had been effected, the arrangements upon which the railway companies would be run had not yet been completely worked out. But an agreement had been reached with the railway companies whereby, although a loan was made to them to enable them to work out that immediate expenditure, arrangement was made for repayment in circumstances which he need not go into in detail now. The whole clause dealt with railways and set out to implement the bargain that had been made with the four main-line railway companies. Clause 32 dealt with docks and harbours, and differed from the railway one only in the fact that with the railways there was a hard-and-fast agreement.

Progress of Railway Bills

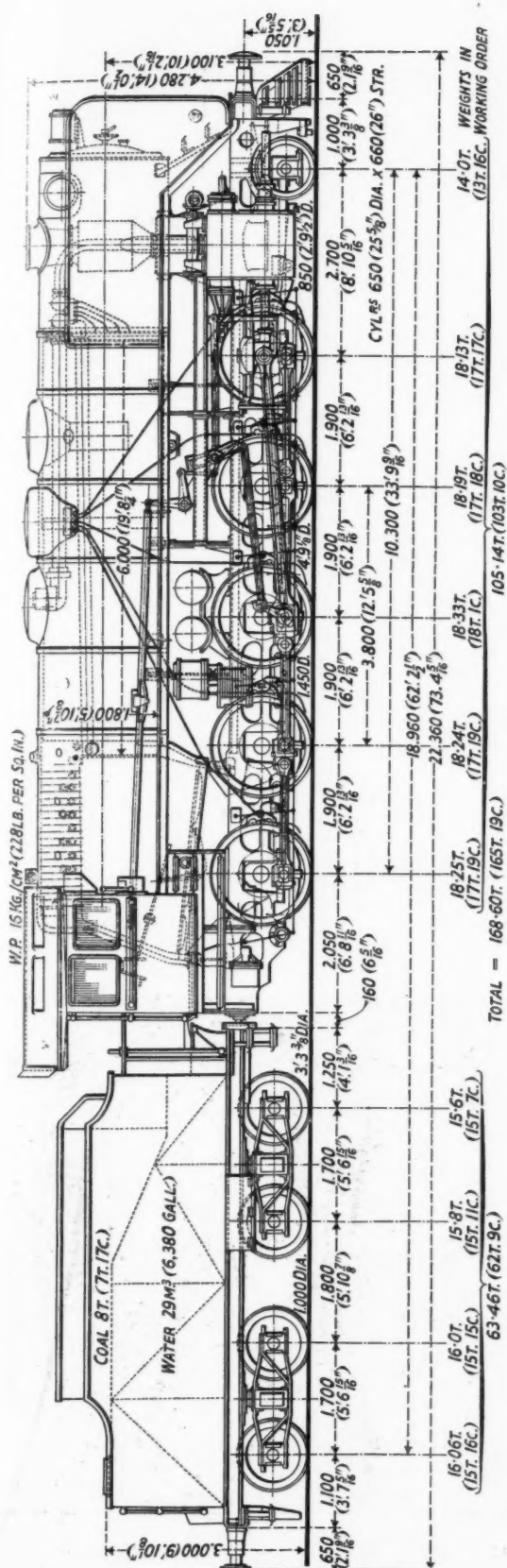
The L.N.E.R. (Superannuation Fund) Bill was, on March 29, reported, with amendments, to the House of Commons from the Committee on Unopposed Bills. On April 4, the L.M.S.R. Bill was similarly reported to the House. The Southern Railway Bill has been placed third in a Group (C) of Bills which will begin to be considered on April 25 by a Select Committee of the House of Commons, presided over by Major Colfox.

Questions in Parliament

Metropolitan Railway Rolling Stock

Mr. S. S. Hammersley (Willesden, E.—U.), on April 3, asked the Minister of Transport, if he would represent to the London Passenger Transport Board the unadvisability of introducing rolling stock on to the Metropolitan Line which contained no partition between the smoking and non-smoking compartments.

Captain Austin Hudson (Parliamentary Secretary to the Ministry of Transport): The Minister of Transport has been in communication with the London Passenger Transport Board and he will send Mr. Hammersley a copy of the reply.



DIMENSIONED OUTLINE DIAGRAM OF CLASS "1E" 2-10-0 TYPE FREIGHT LOCOMOTIVE OF WHICH 58 HAVE JUST BEEN ORDERED FOR THE TURKISH STATE RAILWAYS ADMINISTRATION FROM BRITISH LOCOMOTIVE BUILDERS

These engines have two cylinders, 25½-in. diameter × 26-in. stroke. The superheated boiler provides tube and flue heating surface of 2,230.5 sq. ft.; firebox heating surface of 170.4 sq. ft. with 43 sq. ft. grate area; and superheating surface of 1,137.9 sq. ft. Equipment includes compressed air and back-pressure brakes, and feed-water heaters

Large British Locomotive Order from Turkey

Reference is made in our Contracts and Tenders section in this issue to locomotive orders to a total value of £1,000,000 just placed by the Turkish State Railways Administration with builders in Great Britain. The substantial nature of this transaction, made under the British-Turkish £10,000,000 credit agreement, and its welcome effect from the home locomotive builders' point of view is evident. The original enquiry was for 42 engines of Class "1E," 2-10-0 freight type, and the contracts agreed in Istanbul on April 11 are for the supply of a total of 58 locomotives of this type, divided as follows:—Beyer, Peacock & Co. Ltd., 24; Vulcan Foundry Limited, 24; and Robert Stephenson & Hawthorns Limited, 10.

We understand that these engines will be identical with those supplied in 1937 to the Turkish State Railways by Henschel & Sohn, Kassel. Others of the type were also supplied at that time by Fried. Krupp A.G. They were described and illustrated in THE RAILWAY GAZETTE of January 28, 1938, pp. 175-177, from which article the accompanying dimensioned line diagram and other particulars have been reproduced.

The specified maximum speed for this class is 70 km. p.h. (43·5 m.p.h.). The boiler pressure is 16 atm. (228 lb. per sq. in.). The maximum axleload is limited to 18·5 metric tons (18½ tons), the maximum gradient on which they will work is 1 in 40, and minimum curvature 150 m. (492 ft.) radius.

G.W.R. WOMEN'S AMBULANCE COMPETITION.—The annual contest for trophies and prizes by first aid teams of women employees of the Great Western Railway was decided in the General Meeting Room at Paddington, on March 29. Competitors were subjected to team and individual tests, both judged by Dr. W. J. Crawford, of Southall. At the subsequent presentation, Mr. F. R. Potter, Superintendent of the Line, who was accompanied by Mrs. Potter, presided, and was supported among others by Mr. J. F. Lean, late Principal Assistant to the General Manager, and Mrs. Lean. The result of the contest was announced as under :—

	Marks
1. Paddington—Winner of the "Florence M. Lean" Cup, individual cups, and prizes	166
2. Shrewsbury—Winner of "Mabel A. Potter" Cup and prizes	161
3. Birmingham	148
4. Swindon	145
5. Swansea	110

The trophies were presented by their donors, Mrs. Lean (first) and Mrs. Potter (second), together with prizes awarded by the directors. A pleasing incident was a presentation to Miss R. Marsh, who had undertaken the role of patient for the team test. Competitors were subsequently entertained to tea by the company in the Great Western Railway Hotel.

The Model Railway Club Exhibition

In the spring, the fancy of mechanically minded young men—and their elders—directs their footsteps to the Central Hall, Westminster, the venue of the annual exhibition of the Model Railway Club. At home and abroad, 1939, whatever it may bring in the way of alarms and crises, is marked down as an exhibition year, and by its very nature, the craft of the model railwayman may be counted as one of the arts by which man preserves his sanity in a disordered world. It is this fact which gives this year's Model Railway Exhibition added interest and point.

As in previous years, the *pièce-de-résistance* of the exhibition is the passenger-carrying track which occupies the centre of the main hall. When we visited the hall, a Kirtley 0-6-0 tender locomotive was hauling the train.

The four main-line railway companies are well represented by fine models of locomotives and rolling-stock. On the stand representing L.N.E.R. practice are models ranging from Great Eastern and Great Central "singles" to the standard locomotives that have been built since the grouping. We noticed particularly a fine *Sir Sam Fay* model exhibited by Mr. G. P. Keen, the President of the Model Railway Club.

Excellent models of a railcar and an Est Mountain class engine adorn the stand devoted to French practice. Mr. W. E. P. Kelly, whose Gutland Railway is well known to all model railway enthusiasts, follows French, and more particularly Nord, design for his model locomotives. Some of his de Glehn design engines are on show and will delight the eye of the model railway engineer who has a liking for Continental prototypes. That enterprising 10½-in. gauge passenger-carrying railway in Surrey, the Surrey Border & Camberley, has a stand, and has lent for the occasion one of its locomotives, an 0-6-0 tank.

In the lower hall, several complete layouts are to be found; that of the Ilford & West Essex Club gives especially smooth running. Visitors can make or renew acquaintance with those favourites, the Maybank Railway and the South Midland Railway. Messrs. H. G. and G. G. M. Kerr are showing their very fine model—4 mm. to the foot—of the Newcastle & Carlisle line. The Associated Equipment Co. Ltd., of Southall, has a model of one of the firm's railcars which operate on the Great Western Railway. Model-making firms and tool manufacturers are well represented.

Historical Exhibits

The idea of devoting one stand to exhibits of historical interest was first developed at the Model Railway Exhibition in 1937, and last year, in connection with the centenary of the London & Birmingham Railway, this section was considerably enlarged. On the present occasion many of the exhibits have been selected from the collection of Mr. Charles

E. Lee to show the birth of the railway idea. The first case contains originals and photographic reproductions of early documents beginning with the oldest known railway illustration, from a German mining manual issued about 1519. Details of flanged-wheel wagons for a line at Bath are shown on drawings of 1734 from "A Course in Experimental Philosophy," by Desaguliers. A bound volume of early Acts of Parliament is shown open at a page in the 1790 Act of the Glamorganshire Canal Navigation making reference to "Rail Ways." Details of cast-iron plate rails are shown from the first illustrated volume to deal with this form of railway construction, namely, "The Coal Viewer," by John Curr, issued in 1797.

Particular interest attaches to two large original sheets of railway drawings recently discovered by Mr. Raymond Carpmael, Chief Engineer of the Great Western Railway, among documents taken over by the G.W.R. from one of the South Wales railways at the time of grouping. The original drawings are signed on the back "Wm. Page" and dated 1801. They give a good idea of the vehicle constructional methods of the period, including details of a tip-wagon. Flanged wheels are used and the gauge scales at 4 ft. 5½ in. Original engravings are also shown of the first steam locomotives ever to be introduced into practical commercial service, namely, those used by Blenkinsop on the rack railway at Middleton near Leeds, in 1812.

Many railway coats of arms are shown, and this year attention is devoted chiefly to the constituent companies of the London & North Eastern Railway. The coats of arms have been assembled from various collections, including those of

the L.N.E.R., Mr. A. B. MacLeod, and Mr. J. A. Kay, Editor of THE RAILWAY GAZETTE. Other historical exhibits include some of Mr. G. F. Quartermain's library of early works on atmospheric railways, and some examples from the collection of Mr. A. M. H. Solomon of staff notices issued in connection with Royal railway journeys during the period 1899 to 1910. An unusual specimen is a very early example of railway photography, namely, the Crampton engine *Folkstone*. The photograph was taken, by the long and cumbersome process then available, in the building of the Great Exhibition in Hyde Park, 1851; it was one of a number of photographs taken for the judges of the exhibition. This photograph has recently been unearthed by Mr. O. J. Morris. Mr. W. Noel Jackson shows a railway calendar for 1840 indicating lines opened, lines partly opened, and lines in course of construction, and the comparative lengths of principal railways of Great Britain.

Mrs. A. M. Keen shows some interesting early railway pottery and also a Sheffield plate coffee engine believed to be a copy of an early French china coffee engine made by Tosseli of Paris, an example of which was exhibited in this show last year. Stamps from all parts of the world showing railway scenes, locomotives, bridges, and so forth, are exhibited by Mr. T. W. Samuells. A share certificate of the South Yorkshire, Doncaster & Goole Railway, dated December 14, 1846, has been loaned by Mr. R. Bindon-Blood. One case includes representative cap badges (loaned by the Southern Railway) of the three constituent companies forming the Southern Railway (L.B.S.C.R., S.E.C.R., L.S.W.R.). Early railway tickets are exhibited by Mr. G. F. Quartermain.

The exhibition will remain open until 10 p.m. on Saturday, next, April 15.



A locomotive of the Surrey Border & Camberley Railway arriving at the Model Railway Exhibition

The May Timetables

As is now customary in the month of May, new timetables are published by the London Midland & Scottish and London & North Eastern Railways. The latter company has made a drastic change by adopting, as was done by the Southern Railway some years ago, the relevant section of *Bradshaw's Guide*, bound in a cover of the standard L.N.E.R. brown shade, as its official book. The result is, of course, a much more handy and portable volume. We are glad to note, as a condition of this change, that the timetable compilers have abandoned the extremely compressed form of table that they had adopted for many of the local and branch services, in which minutes only are shown in the train columns, with the hour at the head; practically all these tables have been re-set in the conventional form, with hours and minutes in each column. The tables have also been rearranged in much the same geographical order as the previous full-size L.N.E.R. book, and all the table references are to the serial numbers of the tables, instead of to the pages on which they appear, a desirable improvement which *Bradshaw's Guide* might do well to apply to the tables of all four groups, so rendering itself independent of pagination for reference purposes. The L.M.S.R. adheres to its previous size of timetable book, but some notable steps have been taken towards clarification of the tables. As far as possible printed matter relating to the trains has been removed from the train columns, and replaced by conventional signs, such as "R. C." for restaurant car, "S. C." for sleeping car, and so on, and the letter references have also been simplified. At present these changes are confined chiefly to the Western Division portion of the book, but later they will doubtless be extended to the remaining sections.

As to changes in train services, there is very little to remark. The division of the principal morning Anglo-Scottish services begins in May, as it did last year with the incentive of the Empire Exhibition at Glasgow. From May 1, therefore, the Royal Scot becomes non-stop from Euston to Carlisle, calling only there and at Symington and reaching Glasgow in 7 hr., with the Aberdeen portion leaving independently at 10.5 a.m.; in the up direction, the Glasgow and Edinburgh portions run independently, the former reaching Euston at 5 p.m., and the latter at 5.15 p.m., and last summer's through section of the 6.50 a.m. from Aberdeen is attached to the Edinburgh train at Symington, giving a service in 10 hr. 25 min. from Aberdeen to London. This train and the 10 a.m. from Euston are both booked over the 299.1 miles between Euston and Carlisle in 299 min., this 1 min. acceleration sufficing to add 598 miles to the total of L.M.S.R. runs scheduled at 60 m.p.h. and over. On the L.N.E.R. the Flying Scotsman is accelerated to its 7-hr. summer-booking between King's Cross and Edinburgh,

and during May and June calls at Newcastle (268.3 miles in 276 min. in each direction), with the customary relief trains at 10.5 a.m. from King's Cross and 10.15 a.m. from Edinburgh making the intermediate stops at Grantham, York, Newcastle, Berwick, and, in the up direction only, at Darlington. It is remarkable that the 10.5 a.m. down is not booked to stop at Darlington, as such a stop would avoid the double transfer at York and Darlington of passengers and luggage for Tees-side, and lessen risk of missing the advertised connection at 2.26 p.m. from Darlington to Middlesbrough and Saltburn. On the L.M.S.R. the down Ulster Express from Euston reverts from 6.10 p.m. to its 7 p.m. departure, and non-stop run to Morecambe, the 6.10 p.m. becoming, as previously, a train to Crewe, Preston, and Rochdale only.

Air-Conditioning

In a paper on the air-conditioning of railway vehicles, delivered recently before the Institution of Locomotive Engineers, Mr. A. H. Chilton described with the aid of lantern slides the variety of systems in common use. The ice activated, steam-jet ejector, mechanical and electro-mechanical systems were discussed and compared. Mr. Chilton began with an account of the duties to be performed, and one of his first slides showed the now well-known American comfort chart giving the relations between wet and dry bulb temperatures by lines of constant humidity and effective temperature. The function of an air-conditioning plant was to keep the air in a carriage at a given state irrespective of the heat imparted to it by leakage from outside, by passengers and sundry other sources. It was thus necessary constantly to remove heat during the cooling season. Of the heat to be removed in a standard-gauge car seating 40 passengers, 21 per cent. could be attributed to the absorption of solar radiation, 13 per cent. to conduction from the outside air, 26 per cent. to passengers, and 40 per cent. to the admission of a certain proportion of warm fresh air. The fraction due to conduction through the walls of the carriage was relatively small because much care was now taken (using aluminium foil, rock wool, cork, and other substances) to insulate the carriage interior. The conductivity coefficient was 0.2 to 0.3 B.Th.U. per hour per sq. ft. of surface per degree F. temperature difference in a typical case, but Mr. Chilton showed a section through a carriage wall which had been so built as to give an even lower coefficient.

Control of the cooling was usually effected by a thermostat in the stream of air coming to the conditioning unit for recirculation. Mr. Chilton had tried various kinds of thermostat, including wet bulb ones, but he preferred the mercury column dry bulb

type, and this was now obtainable with a sensitivity of half a degree between its open and closed positions.

The ice activated system was practicable and economical if the cooling season was short, but operators who were satisfied with it and quoted performance figures usually showed that the amount of cooling they were using did not approach the heavy refrigeration loads borne by modern compressor or steam-ejector systems. An interesting slide showed a comparison of four systems on a cost basis, first for a three months' cooling season, and then for a ten months' season. For a three months' season the ice activated system proved cheapest with £1 18s. per 1,000 carriage miles inclusive of fixed, operating, and maintenance charges. For the electro-mechanical system the figure was £2 11s., for the steam ejector £2 17s., and for the mechanical £2 18s. With a ten months' cooling season the figures were: for the electro-mechanical £2 13s., steam ejector £2 19s., mechanical £3, ice-activated £3 8s. As was well known the operating costs for the ice activated system became heavy if ice had to be used during many months in the year. As regards consumption of power and first cost the ice system was easily the cheapest.

A difficulty with compressor systems was to maintain the cooling during long stoppages of the train. With the electro-mechanical system it was usual to arrange for power to be taken from a public electricity supply at stations, but failing this possibility the compressor could be kept running a limited time from the battery. With the mechanical system, in which the compressor was driven from the carriage axle, it was impossible to maintain a circulation of Freon during stops. However, some carriages had been provided with large tanks of water to serve as a cold storage. The compressor was always kept at work while the carriage was running, but if the refrigerating effect was not immediately required in the carriage it was applied to the water in the tank and this was made cold enough to serve as a cooling medium during halts.

Mr. Chilton gave some interesting figures for the demands made by air-conditioning upon the locomotive. This amounted to about 22 h.p. a vehicle for the electro-mechanical and steam-ejector systems, 20 h.p. for the mechanical system, and about 5 h.p. for the ice system. It was explained that for the steam ejector system the figure included an estimate of the h.p. equivalent of the steam used. Another way of stating the demands of this system was to say that it required 9 to 10 h.p. plus steam.

Forthcoming Meetings

May 3 (Wed.).—Canadian Pacific Railway Company (Annual General), Principal office of the Company, Montreal, at noon.

Notes and News

Railway Rates Tribunal.—The next meeting of the tribunal will be held on Tuesday, April 18, at the Incorporated Accountants Hall, near the Temple station, at 10.45 a.m.

Rail Communication between France and Spain.—The resumption of normal railway traffic between France and Spain is now being studied by a mixed commission, and agreement is expected shortly, according to a Reuters message from Hendaye.

New L.M.S.R. Ferry Service.—The L.M.S.R. proposes to institute a ferry service next year between Dunoon and Gourock. The ferry-vessel, the contract for which has not yet been placed, will be capable of carrying between 400 and 500 passengers, and 20 motorcars.

London Transport Extension Opening.—The new tube extension from Highgate to East Finchley, which will link the Northern Line of London Transport with the L.N.E.R. North London suburban lines now being electrified, will be opened on July 3. Trains will run through tunnels which have been made soundproof.

Road-Rail Central Conference Meets.—The Central Conference of rail and road representatives envisaged under the joint memorandum to the Transport Advisory Council by the four main-line railway companies and the Liaison Committee on Road Transport Rates, held its inaugural meeting in London on Wednesday. The business was mainly concerned with general principles and rules of procedure with the object of attaining co-ordination between the road and rail industries as a whole. Mr. A. E. Sewell, Goods Manager (Scottish Area), L.N.E.R., was appointed Chairman for the first meeting, and Mr. R. W. Sewill, Director and Secretary, Associated Road Operators Limited, was appointed Chairman of the road members of the committee; the joint secretaries are Mr. F. G. Bristow, 50, Pall Mall, S.W.1, and Mr. J. T. Stanbra, Railway Clearing House, Eversholt Street, N.W.1.

Railways Athletic Association Britain v. France Football Match.—The annual football match between teams representing the British and French railways for Mr. W. Geo. Pape's challenge cup was played at Leytonstone on April 10 before a large attendance; the result was a draw—three all—extra time failing to produce a winning goal. The scorers for the British railways were R. Jones (G.W.R., Taunton), W. H. Savage (C.L.C., Runcorn), and R. Selmes (L.N.E.R., Doncaster); the goals for the visitors were scored by Rousies (two), and Leclercq. The cup was presented to the French representatives, who will hold it for a period of six months, when the trophy will be returned to this country. In the evening both teams were entertained to

dinner at Slaters & Bodega Limited, Strand, under the chairmanship of Mr. R. Heathcote Hacker (Southern Railway).

Collision on New York Underground.—A collision on March 31 between a moving and a stationary train on the New York underground system in the suburb of Astoria, is reported to have caused injuries to over 250 persons. Most of these were minor injuries, and only 14 persons were taken to hospital, of whom 11 are said to have been seriously injured.

Steel Sleepers on British Railways.—At a meeting of the Railway Club held at the Royal Scottish Corporation Hall on March 9, Mr. A. F. Webber, A.M.I.Mech.E., read a paper entitled "The Use of Steel Sleepers on British Railways." Mr. Webber described in detail the various designs for steel sleepers adopted on British railways.

Through Nanking—Peiping Traffic Resumed.—With the completion of the rebuilding of the Hwai River bridge, destroyed by the Chinese last May, through traffic over the whole of the Tientsin-Pukow Railway was resumed during the week-end of April 1-2, and the Green Express ran from Nanking to Peiping, according to a Reuters message from Tokyo.

Irish Railway Closing Opposed.—The Cork County Committee of Agriculture has adopted a motion protesting against the contemplated closing of the Cork and Bandon railway line or any of its branches, "as such closing down would inflict a staggering blow on the farming and business community, and would cripple the farming industry in West Cork, as well as throwing hundreds of men out of employment." Speaking in favour of the motion, Mr. O'Driscoll said that the closing of the Cork and Bandon line would throw 500 men out of employment and would affect 2,000 people. It would also mean the loss of £2,529 rates to the county.

Argentine Transandine Railway Sale.—Meetings of the various classes of stockholders and shareholders in the Argentine Transandine Railway Co. Ltd. held at Winchester House, E.C., on April 5, approved the scheme of arrangement between the company and the respective classes of holders. Mr. J. A. Goudge presided and explained the terms of purchase arranged with the Argentine Government, namely £675,000 in bonds and £75,000 in cash. He showed that the £310,000 of "A" debenture stock received full consideration. The "B" debenture stockholders got 80 per cent. in a new "B" stock and 20 per cent. in a third "C" stock, and also, subject only to the "A" stock, a specific charge on the 4½ per cent. sterling railway bonds and the £75,000 fund. Each £100 of preferred shares would receive 40 per cent. in "C" stock, plus 60 shares of 1s. each, and the deferred shares would be cut down to one-twentieth of their value in the new shares.

British and Irish Railway Stocks and Shares

Stocks	Highest 1938	Lowest 1938	Prices	
			April 12, 1939	Rise/ Fall
G.W.R.				
Cons. Ord.	65½	25½	26	—
5% Con. Prefce....	118¾	74	77	-2
5% Red.Pref.(1950)	111¾	90	90	—
4% Deb.	111	97½	94	-2
4½% Deb....	112½	100½	98	—
4½% Deb....	118½	104	105	-1
5% Deb.	131½	119	115½	—
2½% Deb....	69¾	60	60½	-1
5% Rt. Charge	129	114	107½	—
5% Cons. Guar.	128½	103	101	—
L.M.S.R.				
Ord.	30½	11	13¼	+¼
4% Prefce. (1923) ...	70¼	23	29½	-1
4% Prefce.	82¼	43¾	48½	+1
5% Red.Pref.(1955)	103½	66	71½	-1
4% Deb.	105½	85	89	—
5% Red.Deb.(1952)	114¼	105	107½	—
4% Guar.	102¾	77½	77	-2
L.N.E.R.				
5% Pref. Ord.	89½	3½	4	—
Def. Ord.	47½	21½	2½	—
4% First Prefce.	68¼	21	25½	-1
4% Second Prefce.	27¼	8	10	-½
5% Red.Pref.(1955)	97	40¼	47½	—
4% First Guar.	97½	66¼	68	—
4% Second Guar.	91¼	52	52	-2½
3% Deb.	79¼	60	63	—
4% Deb.	104½	77	84	—
5% Red.Deb.(1947)	110½	97	102½	—
4½% Sinking Fund Red. Deb.	108½	101	100	—
SOUTHERN				
Pref. Ord.	87	47½	62	-½
Def. Ord.	21¾	9¼	13¼	-½
5% Pref.	115	83	89	-½
5% Red.Pref.(1964)	115½	98	95½	—
5% Guar. Prefce.	128½	106	106	—
5% Red.Guar.Pref.(1957)	116	109½	108	—
4% Deb.	109¼	95	93½	—
5% Deb.	129	117	112½	-1
4% Red. Deb. 1962-67	107	101½	101½	—
BELFAST & C.D.				
Ord.	4	3½	4	—
FORTH BRIDGE				
4% Deb.	102	99½	96½	—
4% Guar.	103¼	94½	94	—
G. NORTHERN (IRELAND)				
Ord.	5½	2½	3½	—
G. SOUTHERN (IRELAND)				
Ord.	25½	8½	10	—
Prefce.	35	13	12¼	—
Guar.	70¼	30½	30½	—
Deb.	83	56	51½	—
L.P.T.B.				
4½% "A"	119½	107½	110	—
5% "A"	130	117	117½	—
4½% "T.F.A."	108	98	103½	—
5% "B"	122½	105	110	—
"C"	84	68	68½	-2
MERSEY				
Ord.	24¼	16½	21	—
4% Perp. Deb.	102½	94¾	94½	—
3% Perp. Deb.	77	69	66½	—
3% Perp. Prefce.	66½	57	55	—

British and Irish Traffic Returns

GREAT BRITAIN	Totals for 14th Week			Totals to Date		
	1939	1938	Inc. or Dec.	1939	1938	Inc. or Dec.
L.M.S.R. (6,831 mls.)	678,000	470,000	+ 208,000	5,727,000	5,618,000	+ 109,000
Passenger-train traffic...	415,000	509,000	- 94,000	6,165,000	6,840,000	- 675,000
Merchandise, &c. ...	254,000	240,000	+ 14,000	4,124,000	4,124,000	- 56,000
Coal and coke ...	669,000	749,000	- 80,000	10,345,000	10,964,000	- 619,000
Goods-train traffic ...	1,347,000	1,219,000	+ 128,000	16,072,000	16,582,000	- 510,000
Total receipts ...	421,000	318,000	+ 103,000	3,760,000	3,717,000	+ 43,000
L.N.E.R. (6,320 mls.)	298,000	228,000	+ 70,000	4,284,000	4,851,000	- 567,000
Passenger-train traffic...	196,000	228,000	- 32,000	3,685,000	3,814,000	- 129,000
Merchandise, &c. ...	494,000	581,000	- 87,000	7,959,000	8,663,000	- 706,000
Coal and coke ...	915,000	899,000	+ 16,000	11,719,000	12,382,000	- 663,000
Goods-train traffic ...	296,000	196,000	+ 100,000	2,424,000	2,345,000	+ 79,000
Merchandise, &c. ...	175,000	202,000	- 27,000	2,628,000	2,793,000	- 165,000
Coal and coke ...	111,000	107,000	+ 4,000	1,630,000	1,732,000	- 102,000
Goods-train traffic ...	286,000	309,000	- 23,000	4,258,000	4,525,000	- 267,000
Total receipts ...	582,000	505,000	+ 77,000	6,682,000	6,870,000	- 188,000
G.W.R. (3,737 mls.)	427,000	293,000	+ 134,000	3,824,000	3,713,000	+ 111,000
Passenger-train traffic...	47,000	61,000	- 14,000	791,500	854,500	- 63,000
Merchandise, &c. ...	24,000	23,000	+ 1,000	499,500	505,500	- 6,000
Coal and coke ...	71,000	84,000	- 13,000	1,291,000	1,360,000	- 69,000
Goods-train traffic ...	498,000	377,000	+ 121,000	5,115,000	5,073,000	+ 42,000
Total receipts ...	1,159	1,251	- 92	18,162	18,575	- 413
Liverpool Overhead ...	4,484	4,279	+ 205	62,721	61,404	+ 1,317
Mersey (4½ mls.) ...	556,300	576,400	- 20,100	23,208,000	23,039,900	+ 168,100
*London Passenger Transport Board ...	1,968	1,753	+ 215	23,494	23,354	+ 140
IRELAND	436	416	+ 20	6,101	6,153	- 52
Belfast & C.D. pass.	2,404	2,169	+ 235	29,595	29,507	+ 88
(80 mls.) goods	11,450	8,150	+ 3,300	117,350	111,950	+ 5,400
Great Northern pass.	8,900	8,100	+ 800	137,200	123,250	+ 13,950
(543 mls.) goods	20,350	16,250	+ 4,100	254,550	235,200	+ 19,350
Great Southern pass.	37,123	30,009	+ 7,114	398,462	394,864	+ 3,598
(2,076 mls.) goods	40,197	40,104	+ 93	567,402	569,353	- 1,951
total	77,320	70,113	+ 7,207	965,864	964,217	+ 1,647

* 41st week (before pooling) Good Friday, 1939

British and Irish Traffic Returns

GREAT BRITAIN	Totals for 13th Week			Totals to Date		
	1939	1938	Inc. or Dec.	1939	1938	Inc. or Dec.
L.M.S.R. (6,891 mls.)	428,000	423,000	+ 5,000	5,049,000	5,148,000	- 99,000
Passenger-train traffic...	489,000	493,000	- 4,000	5,750,000	6,331,000	- 581,000
Merchandise, &c. ...	307,000	240,000	+ 67,000	3,926,000	3,884,000	+ 42,000
Coal and coke ...	796,000	733,000	+ 63,000	9,676,000	10,215,000	- 539,000
Goods-train traffic ...	1,224,000	1,156,000	+ 68,000	14,725,000	15,363,000	- 638,000
Total receipts ...	269,000	275,000	- 6,000	3,339,000	3,399,000	- 60,000
L.N.E.R. (6,320 mls.)	349,000	349,000	-	3,996,000	4,498,000	- 502,000
Passenger-train traffic...	288,000	253,000	+ 35,000	3,586,000	3,586,000	-
Merchandise, &c. ...	637,000	602,000	+ 35,000	7,465,000	8,084,000	- 619,000
Coal and coke ...	906,000	877,000	+ 29,000	10,804,000	11,483,000	- 679,000
Goods-train traffic ...	178,000	204,000	- 26,000	2,128,000	2,149,000	- 21,000
Merchandise, &c. ...	121,000	106,000	+ 15,000	1,519,000	1,625,000	- 106,000
Coal and coke ...	335,000	310,000	+ 25,000	3,972,000	4,216,000	- 244,000
Goods-train traffic ...	513,000	488,000	+ 25,000	6,100,000	6,365,000	- 265,000
Total receipts ...	280,000	282,000	- 2,000	3,397,000	3,420,000	- 23,000
S.R. (2,140 mls.)	70,500	69,000	+ 1,500	744,500	793,500	- 49,000
Passenger-train traffic...	37,500	31,000	+ 6,500	475,500	482,500	- 7,000
Merchandise, &c. ...	108,000	100,000	+ 8,000	1,220,000	1,276,000	- 56,000
Coal and coke ...	388,000	382,000	+ 6,000	4,617,000	4,696,000	- 79,000
Goods-train traffic ...	1,254	1,282	- 28	17,003	17,324	- 321
Liverpool Overhead ...	4,808	4,576	+ 232	58,237	57,125	+ 1,112
Mersey (4½ mls.) ...	563,900	566,700	- 2,800	22,651,700	22,463,500	+ 188,200
*London Passenger Transport Board ...	1,609	1,681	- 72	21,526	21,601	- 75
IRELAND	481	515	- 34	5,665	5,737	- 72
Belfast & C.D. pass.	2,090	2,196	- 106	27,191	27,338	- 147
(80 mls.) goods	7,450	7,500	- 50	105,900	103,800	+ 2,100
Great Northern pass.	12,550	11,000	+ 1,550	128,300	115,150	+ 13,150
(543 mls.) goods	20,000	18,500	+ 1,500	234,200	218,950	+ 15,250
Great Southern pass.	28,950	29,677	- 727	361,339	364,855	- 3,516
(2,076 mls.) goods	42,268	40,640	+ 1,628	527,205	529,249	- 2,044
total	71,218	70,317	+ 901	888,544	894,104	- 5,560

* 40th week (before pooling)

CONTRACTS AND TENDERS

British Locomotives for Turkey

The Turkish State Railways Administration placed orders on April 11 with British locomotive building firms for 58 heavy freight 2-10-0 locomotives of which 24 are to be supplied by Beyer Peacock & Co. Ltd., 24 by the Vulcan Foundry Limited, and ten by Robert Stephenson & Hawthorns Limited. The contract is stated to be worth £1,000,000 and payment is to be made under the £10,000,000 credit agreement made with Great Britain. The enquiry, referred to in this section in our issue of January 13, 1939, was for 2-10-0 locomotives of the Turkish State Railways Class "IE." We understand that the locomotives are to be duplicates of those described and illustrated in the January 28, 1938, issue of THE RAILWAY GAZETTE and a dimensioned drawing is reproduced on page 629 of this issue.

Horseley Bridge & Thomas Piggott Limited has received a sub-contract from the London Passenger Transport Board for widening six bridges on the Metropolitan Line between North Harrow and Rickmansworth. This section is being widened to four tracks and the general contractor is Sir Robert MacAlpine & Sons.

G.W.R. Contracts

The directors of the Great Western Railway have authorised the placing of the following contracts:—

W. T. Nicholls Limited: Construction of new station buildings on the up side at Plymouth (North Road) station.

E. Pollard & Co. Ltd.: Alterations and provision of new shop front at Nos. 170A and 170B, Strand, London, W.C.2.

J. Lysaght Limited: Supply of steel-work of British manufacture for the reconstruction and lengthening of Wrexham Road bridge, Ruabon.

Siegwart Fireproof Co. Ltd.: Supply and fixing of Siegwart pre-cast flooring, &c., at Acton station.

At Swindon Works—

The British Oxygen Co. Ltd.: Supply of a frame cutting machine in "L2" (Tank) Shop, Locomotive Works.

Craven Bros. (Manchester) Ltd.: Supply of horizontal duplex keyseating and cotterway machine for "AM" (Machine) Shop, Locomotive Works.

S. Platt Limited: Supply of two reeling machines for the rolling mills at Locomotive Works.

At the Company's Docks—

Overhaul of vessels as follow:—

The Penarth Pontoon Slipway & Ship Repairing Co. Ltd.: Ss. *St. David*, s.h.b. *Sir Ernest Palmer*.

Harland & Wolff Limited: Ss. *Sir John Hawkins*.

The Port Talbot Dry Dock Co. Ltd.: *St. Trusty*.

H. Covington & Sons Limited: Dredging at Brentford Dock and Chelsea Dock and Creek.

Stothert & Pitt Limited: Supply and erection of three three-ton wide portal

portable level luffing electric cranes for Trinity Pier, Plymouth Docks, and one three-ton portable level luffing electric crane for Glasgow Wharf, Plymouth Docks.

The Chinese Government Purchasing Commission, on behalf of the Chinese Minister of Communications, has placed the following orders to the inspection of Messrs. Fox & Mayo for equipment required for the Szechuen-Yunnan Railway:—

W. H. Willcox & Co. Ltd.: Hand pumps and hose.

Ruston & Hornsby Limited: Centrifugal pumps with diesel engines.

Fellows Brothers Limited: Screw jacks. Staveley Coal & Iron Co. Ltd.: Cast iron pipes and fittings.

Mechans Limited: Steel water tanks and towers.

Glenfield & Kennedy Limited: Water columns.

R. G. Gibbins & Co. Ltd.: Hand winches.

British Steel Piling Co. Ltd.: Steam winches and vertical boilers.

Dorman Long & Co. Ltd.: Galvanised steel wire.

Ericsson Telephones Limited: Telephone material.

In order to improve railway telephone communication, the G.W.R. has authorised a new three-channel carrier telephone installation which will provide additional trunk lines between Paddington and Cardiff, Paddington and Newport, Paddington and Bristol, Swindon and Newport, Newbury and Westbury. The trunk lines will be connected to the existing telephone exchanges at each place. It is also proposed to provide an automatic telephone exchange at Oxley, which will work as a satellite exchange to the present automatic telephone exchange in the Wolverhampton telegraph office. Inter-communication will

be available between each of the places connected and with all extension lines at Wolverhampton, by direct dialling.

During 1938 the American railways purchased scarcely any main-line locomotives, and the bulk of their slender orders was restricted to small diesel-electric shunters. Now, however, with traffic and earnings continuing to be maintained at relatively substantial levels, considerable activity in the direction of the acquisition of new heavy motive power is expected. The Southern Pacific and the Union Pacific led off at the end of February with orders for 40 and 15 respectively—all of them heavy-duty steam locomotives.

Locomotive boilers for India

The North Western Railway of India Administration is calling for tenders (Tender No. 210.S/18/17) for the supply and delivery of two locomotive boilers, superheated, for I.R.S. engines, working pressure 180 lb. per sq. in. Tenders must be received at the General Manager's Office, N.W.R., Lahore, by May 4. A copy of the specification and general conditions of tender, together with drawings, may be borrowed from the Department of Overseas Trade, London, S.W.1.

Tenders, receivable by April 26, are invited by the Controller of Stores, North Western Railway, Lahore, India, for the supply of 15 boilers for HG/S 2-8-0 type superheated locomotives.

Mr. A. Ingram, until recently with Ferodo Limited, has been appointed Advertising Manager to B.E.N. Patents Limited. The firm has arrangements in hand for opening a centrally situated London depot where comprehensive stocks of complete machines and spare parts will be carried, and where demonstration facilities will be available.

New Station at Swanley, S.R.

The new Southern Railway station at Swanley, Kent, will be brought into use on Sunday next, April 16. The station, which has been constructed at a cost of £130,000, will be known as Swanley, and will supersede Swanley Junction which is situated a short distance to the east. Forming part of the Gillingham to Maidstone East electrification extension schemes, which will be brought into operation this summer, this station will not only facilitate traffic working under the new conditions, but also give greatly improved service to the travelling public.

The new station has two island platforms each 820 ft. in length and 28 ft. wide, and capable of accommodating the longest electric trains. With roofing 395 ft. long, each platform has waiting room and lavatory accommodation, and, on the down side, a refreshment room. Temporary station buildings, comprising bookstall, booking and parcels offices, have been built, as the permanent structures are in abeyance until such time as the position of the new by-pass road has been decided

These buildings are connected with a new covered footbridge giving access to both platforms, and on the down side plans allow for a passimeter when desired. Two electric lifts are being put in to connect the platforms with this new footbridge. The public footbridge over the line in the London direction has been repositioned, and from this a pathway will be formed on the up side to facilitate access to and from the new station. The existing road to the electric control house has been extended and widened to form a temporary roadway to the new station buildings.

A new signal box has been constructed on the up side at the Maidstone end, to displace the present Swanley Junction and Yard cabins. Other new works include an enlarged electric high tension switchgear room, various staff rooms, and sidings for berthing electric stock. Whilst all this work is being carried out, the opportunity is being taken to improve the existing junction with the Maidstone line, thereby easing the present speed restriction of 20 m.p.h.

OFFICIAL NOTICES

Crown Agents for the Colonies

COLONIAL GOVERNMENT APPOINTMENTS

APPLICATIONS from qualified candidates are invited for the following post:—

ASSISTANT ENGINEER

required by the Gold Coast Government Railway for two tours of 12 to 24 months with possible permanency. Salary £475 a year for two years then £500—£25—£600—£30—£840 a year and then subject to promotion to a vacancy, by annual increments of £40 to £1,000 a year. Free passages and quarters and liberal leave on full salary. Candidates, aged 25-35, must be Corporate Members of the Institution of Civil Engineers or possess an engineering degree recognised as granting exemption from Sections A and B of the A.M.I.C.E. examination, and must have had practical experience on a British Railway. Preference will be given to candidates who have had, in addition to the above qualifications, practical experience in harbour maintenance.

Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience, and mentioning this paper, to the Crown Agents for the Colonies, 4, Millbank, London, S.W.1, quoting M/8299.

THE Chief Railway Commissioner, Burma Railways, Rangoon, invites Tenders for: One Wheel Lathe for turning metre gauge railway locomotive wheels 2 ft. 6 in. diameter on tread.

Specification obtainable from the Director-General, India Store Department, Belvedere Road, Lambeth, London, S.E.1, at a fee of 5s., which will not be returned.

Tenders must provide for delivery of the lathe ex-wharf Rangoon, Burma, and for payment in Burma in rupees. Any Tender which does not comply with these conditions will not be considered.

Tenders must be sent direct to the CHIEF RAILWAY COMMISSIONER, BURMA, RANGOON, to reach him before Noon on 15th May, 1939.

Royal State Railways of Siam

NOTICE.

SEALED Tenders for the supply of electric tramcars and trailers will be received by the Superintendent of Stores, Royal State Railways of Siam, Bangkok, Siam, up to 14.00 o'clock on the 28th July, 1939, at which hour and date they will be privately opened in the Superintendent's Office.

Blank Tender Forms are obtainable from MESSRS. SANDBERG, 40, Grosvenor Gardens, London, S.W.1, and 25, Broadway, New York City, at the price of £2 0s. 0d. and U.S. \$10.00 per set respectively.

THE ADMINISTRATION,

ROYAL STATE RAILWAYS OF SIAM.

RAILWAY AND OTHER REPORTS

Barsi Light Railway Co. Ltd.—The directors have declared a dividend of 2 per cent. actual, in respect of the half-year ended September 30, 1938, on the ordinary stock, payable on April 28, 1939.

Central Argentine Railway Limited.—The board has decided not to pay any interim preference dividends, and the question of any declaration in respect of the year to June 30, 1939, will be considered when the figures for the whole year are available. A similar statement was made at this time last year.

San Paulo (Brazilian) Railway Co. Ltd.—The directors recommend a dividend on the ordinary stock of 2 per cent., tax free, for the whole year 1938. The interim dividend was passed last September. For 1937 the company paid an interim dividend and a final dividend each of 2 per cent., tax free. The dividend for the whole year 1936 was 5 per cent.

Trent Motor Traction Co. Ltd.—Net profit for 1938 of this company, which is controlled jointly by the L.M.S.R. and L.N.E.R. companies and Tilling & British Automobile Traction Limited, amounted to £73,444, compared with £72,441 for the year 1937. Adding £14,207 brought forward, makes a total of £87,651. General reserve takes £20,048, against £29,082, and the dividend for the year is maintained at 10 per cent., leaving £13,575 to be carried forward. During the year the issued capital was increased to £540,288 by the allotment to shareholders of 90,048 shares of £1 each.

Metropolitan Assented Stock.—Glyn, Mills & Co., the trustee and registrar under the trust deed relating to the Metropolitan Assented Stock constituted by Section 89 of the London Passenger Transport Act, 1933, announces that out of the instalment of interest received on the London Transport "C" stock held under such trust deed, a distribution of 1 per cent. actual

(less income tax at 5s. 6d. in the pound) on such assented stock (on account of the interest on such stock for the year ending June 30, 1939) will be made to those persons who, at the close of business on April 1, 1939, are the registered holders of such assented stock, and that the warrants for such interest will be posted on April 15, 1939.

Canadian National Railways.—The report for the year ended December 31, 1938, shows operating revenues of \$182,241,723, a decrease of \$16,154,886, and that in the operating expenses of \$176,175,312 there was a reduction of \$4,613,546, leaving net revenues \$11,541,330 lower at \$6,066,411. The saving in operating expenses was secured, despite heavy increases for wages and cost of materials.

W. T. Henley's Telegraph Works Co. Ltd.—The directors recommend a final dividend on the ordinary stock of 10 per cent. and a cash bonus of 5 per cent., making a total payment of 20 per cent. for the year 1938, the same total as for 1937. Net profits for 1938, subject to audit, amounted to £374,042, compared with £383,112 for 1937. The sum of £100,000 is again placed to reserve and a provision is made of £16,168 for depreciation in gilt-edged investments, leaving £415,394 to be carried forward, against £426,520 brought in.

Yorkshire Woollen District Transport Co. Ltd.—For the year 1938 the profit was £97,323, compared with £90,351 for 1937, and the amount brought in was £12,006, against £13,655. The dividend is unchanged at 10 per cent. for the year, but it requires £52,800, compared with £44,000 for 1937, the issued capital having been increased to £528,000 by the allotment during the year to shareholders of 88,000 shares of £1 each. A sum of £30,000 is transferred to reserve, and the amount to be carried forward is £26,529. This company is controlled jointly by the L.M.S.R. (with 176,000 shares), the L.N.E.R. (with 88,000

shares), and the British Electric Traction Co. Ltd.

Skefko Ball Bearing Co. Ltd.—This company is the British unit of the organisation controlled by the Swedish Ball Bearing Company. Net profits for the year 1938 amounted to £251,167, against £275,149 for 1937. The directors recommend a final dividend of 1s. a share, free of tax, making 1s. 6d. a share, or 30 per cent., free of tax, for the whole year 1938, the same as for 1937.

Scammell Lorries Limited.—This company reports a net profit for the year 1938 of £35,558, which compares with £33,486 for 1937. A dividend of 10 per cent. is to be paid on the issued capital of £157,547. This is the first distribution since that of 20 per cent. for the year ended June 30, 1929. As last year, £20,000 goes to general reserve; the carry forward is £16,334, against £16,903.

Vickers Limited.—The profit for the year 1938 amounted to £1,975,608, compared with £2,020,653 for 1937, and the net profit was £948,853, after deducting £576,756 for income tax, debenture interest, &c., and transferring £100,000 to contingencies reserve, and £350,000 to reserve. As already announced, the dividend for the year on the ordinary stock is again 10 per cent., less tax, requiring £446,436, and the amount to be carried forward is £321,760, against £237,534 brought in.

British Timken Limited.—After charging depreciation, &c., the net profit for 1938 is £91,879, against £133,007 for 1937. Sums of £30,000 and £25,000 are transferred to tax reserve and to general reserve, respectively, comparing with £40,000 and £60,000 a year ago. The dividend proposed on the ordinary shares is 15 per cent., at the same rate as for 1936 and 1937, and requires £39,150, leaving £22,869, against £25,139, to be carried forward. The capital on which the present dividend is payable has been increased by the scrip bonus of 20 per cent. distributed in April, 1937, and by the capitalisation of £60,000 of general reserve.

Railway Share Market

The uncertainty which continues to surround the international political outlook has again dominated the stock and share markets, and on Tuesday there was a general marking down of values in all sections of the Stock Exchange. The volume of business has remained extremely small, but selling pressure was much less than was feared at one time, and subsequently markets developed a steadier tendency, although in most cases prices have again moved against holders on balance for the week.

Securities of the home railways were influenced by the prevailing market trend, but on Wednesday firmer conditions prevailed as a result of the good traffic returns, which were in excess of general expectations. Great Western ordinary proved one of the steadier features, and after declining to 25 improved fractionally to 25½, while the 5 per cent. preference stock was 76½, the 5 per cent. guaranteed stock 100½, and the 4 per cent. debentures 93½. Southern preferred attracted rather more attention around 62½, as did the deferred stock around 13½, while the 5 per cent. preference was 87½ and the 4 per cent. debentures 94½. It may be recalled that in respect of 1938 the full 5 per cent.

dividend on the preferred stock, which required £1,379,330, was paid, although it was not quite fully earned and necessitated drawing £131,871 from the carry forward. To pay ½ per cent. on the deferred stock would require £157,451, and it is apparent that there would have to be a good improvement in net receipts to permit this stock to return to the dividend list, as debenture interest charges will be higher owing to the requirements of the new 4 per cent. debentures. On the other hand, it is probable that the railway's traffics would benefit considerably if the application for an increase of fares in the London area were granted. L.M.S.R. ordinary transferred between 12½ and 13½, while the 4 per cent. guaranteed stock was 76½, the 1923 preference 29½, and the 4 per cent. preference 47½. The 4 per cent. debentures were quoted at 88½. L.N.E.R. first preference attracted little attention around 25, and the second preference was no better than 9½, while the first and second guaranteed stocks failed to show much activity despite the apparently generous yields offered at current levels. The 4 per cent. debentures were quoted at 83 and the 3 per cent. debentures at 62. London

Transport "C" was lower at 68½, while the "A" stock was 115½, and the "B" stock declined a point to 109.

Argentine railway securities were mostly lower on balance, but this was again attributed entirely to surrounding market conditions, as very little selling was in evidence. It is generally believed that most of the preference and debenture stocks have been reduced to unduly low levels, and that they can be expected to respond when the current trend of markets is reversed. Similar remarks would also appear to apply to the ordinary stocks of the leading companies. Cordoba Central debentures attracted some attention. San Paulo was lower at 24½, due partly to the deduction of the dividend from the price, while other securities of Brazilian railways were unresponsive to the "freeing" of the Brazilian exchange. Nitrate Rails were quoted at 35s. American railway shares have declined sharply on balance, owing to the reaction shown by New York markets. After declining to 4, Canadian Pacific improved to 4½, and the preference stock, which touched 20 at one time, was subsequently better at 20½. Lower prices ruled for French railway sterling bonds.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

Railways	Miles open 1938-39	Week Ending	Traffics for Week		No. of Weeks	Aggregate Traffics to Date			Shares or Stock	Prices				
			Total this year	Inc. or Dec. compared with 1938		Totals		Increase or Decrease		Highest 1938	Lowest 1938	Apr. 12, 1939	Yield % (See Note)	
						This Year	Last Year							
South & Central America														
Antofagasta (Chili) & Bolivia	834	9.4.39	£ 10,150	- £ 7,570	14	£ 193,360	£ 245,850	- £ 52,490	Ord. Stk.	14	71½	7	Nil	
Argentine North Eastern	753	8.4.39	7,959	+ 428	41	388,975	369,300	+ 19,675	A. Deb.	82	75	72½	Nil	
Argentine Transandine									6 p.c. Deb.	8	7	7	Nil	
Bolivar	174	Mar., 1939	4,600	- 200	13	11,700	11,900	- 200	Bonds.	10	4	51½	91½	
Brazil									Ord. Stk.	61½	31½	31½	Nil	
Buenos Ayres & Pacific	2,806	8.4.39	115,074	+ 13,771	41	3,540,078	3,603,540	- 63,462	Ord. Stk.	15½	8	14	Nil	
Buenos Ayres Central	190	18.3.39	£72,800	- £27,600	38	\$3,893,200	\$4,536,900	- \$641,700	Mt. Deb.	175½	81½	9	Nil	
Buenos Ayres Gt. Southern	5,082	8.4.39	149,442	+ 11,166	41	5,869,478	6,197,455	- 327,977	Ord. Stk.	131½	53½	8	Nil	
Buenos Ayres Western	1,930	8.4.39	49,504	+ 4,715	41	1,828,365	1,860,794	- 34,429	"	6	21½	31½	Nil	
Central Argentine	3,700	8.4.39	120,751	+ 12,786	41	4,770,360	5,010,441	- 240,081	Dfd.	3	11½	11½	Nil	
Do.									Ord. Inc.	34½	3½	21½	Nil	
Cent. Uruguay of M. Video	972	1.4.39	20,031	+ 4,684	40	731,658	716,998	+ 14,658	Stk.	28	22½	22	87½	
Cordoba Central	1,218								1 Mt. Db.	105½	104	103½	51½	
Costa Rica	188	Feb., 1939	21,719	+ 2,952	35	177,211	197,323	- 20,112	Ord. Stk.	71½	31½	41½	Nil	
Dorada	70	Mar., 1939	14,300	- 100	13	40,400	46,800	- 6,400	Ord. Sh.	3/-	1/-	1	Nil	
Entre Rios	810	8.4.39	14,280	+ 850	41	635,672	587,359	+ 48,303	1st Pref.	6d.	6d.	1½	Nil	
Great Western of Brazil	1,092	8.4.39	8,300	+ 1,900	14	154,000	119,300	+ 34,700	Stk.	8	61½	71½	Nil	
International of Cl. Amer.	794	Feb., 1939	\$549,437	+ \$72,140	8	\$1,097,710	\$964,438	+ \$133,272	Ord. Stk.	4	1	2	Nil	
Interoceanic of Mexico									Ord. Sh.	52/9	19½	15½	41½	
La Guaira & Caracas	22½	Mar., 1939	6,415	+ 1,320	13	15,820	14,675	+ 1,145	Pr. Li. Stk.	60	55½	47½	129½	
Leopoldina	1,918	8.4.39	20,179	+ 3,060	14	294,371	270,423	+ 23,948	Pref.	53½	13½	2	Nil	
Mexican	483	31.3.39	\$499,100	+ \$49,600	13	\$4,046,600	\$4,077,600	- \$31,000	Pr. Li. Db.	23	20	19½	Nil	
Midland of Uruguay	319	Feb., 1939	9,048	- 1,572	35	73,488	75,972	- 2,484	Ord. Stk.	64	28	24½	85½	
Nitrate	385	31.3.39	6,781	- 1,442	13	32,995	47,988	- 15,003	Ord. Sh.	13½	1½	1½	Nil	
Paraguay Central	274	8.4.39	\$2,710,000	- \$215,000	41	\$123,029,000	\$126,279,000	- \$3,250,000	Ord. Stk.	33½	1½	1	Nil	
Peruvian Corporation	1,059	Mar., 1939	69,598	- 10,836	39	603,165	740,756	- 137,591	Deb. Stk.	2	1	2	Nil	
Salvador	100	1.4.39	£17,450	- 46,050	40	\$844,964	\$809,975	+ \$34,989						
San Paulo	153½	2.4.39	32,427	- 1,684	13	348,185	415,714	- 47,529						
Taltal	160	Mar., 1939	3,735	+ 2,450	39	27,530	31,955	- 4,425						
United of Havana	1,353	8.4.39	29,268	- 5,846	41	942,422	1,026,460	- 84,038						
Uruguay Northern	73	Feb., 1939	789	- 255	35	8,250	7,481	+ 769						
Canada														
Canadian National	23,772	31.3.39	995,147	+ 6,000	13	8,239,488	8,244,596	- 5,108	Perp. Dbs.	72	60	69	51½	
Canadian Northern									4 p.c. Gar.	104	90	97½	41½	
Grand Trunk									Ord. Stk.	87½	41½	4	Nil	
Canadian Pacific	17,186	31.3.39	698,800	+ 29,000	13	5,869,200	6,033,200	- 164,000						
India†														
Assam Bengal	1,329	20.3.39	39,885	+ 2,642	51	1,478,329	1,358,786	+ 119,543	Ord. Stk.	81½	70	70½	41½	
Barsi Light	202	20.3.39	2,895	- 615	51	133,102	135,150	- 2,048	Ord. Sh.	60½	54½	53½	7½	
Bengal & North Western	2,108	20.3.39	78,061	- 4,581	24	1,371,569	1,336,488	+ 35,081	Ord. Stk.	311	278	255	7½	
Bengal Doonars & Extension	161	20.3.39	3,031	- 400	51	143,561	142,458	+ 1,103	"	89	83	85½	75½	
Bengal-Nagpur	3,272	20.3.39	212,475	+ 17,421	51	6,855,512	6,880,277	- 24,765	"	95½	90	86½	45½	
Bombay, Baroda & Cl. India	3,085	31.3.39	284,625	- 24,750	52	8,846,475	8,978,175	- 131,700	"	112½	95	101½	57½	
Madras & Southern Mahratta	2,967	20.3.39	169,425	+ 4,792	51	5,478,088	5,206,694	+ 271,394	"	108	97	96½	73½	
Rohilkund & Kumaon	571	20.3.39	17,837	- 312	24	257,829	265,672	- 7,843	"	308	285	270	61½	
South Indian	2,531½	20.3.39	107,174	- 8,252	51	3,936,242	4,067,771	- 101,529	"	104	101	100½	41½	
Various														
Beira-Umtali	204	Jan., 1939	76,317	- 3,514	17	326,567	356,561	- 29,994						
Egyptian Delta	620	20.3.39	5,646	+ 387	51	219,266	231,019	- 11,753	Prf. Sh.	7½	5/6	1½	Nil	
Kenya & Uganda	1,625	Feb., 1939	253,899	- 1,712	8	503,301	539,655	- 36,354						
Manila									B. Deb.	49	41	43½	95½	
Midland of W. Australia	277	Feb., 1939	14,943	- 119	35	122,176	113,039	+ 9,137	Inc. Deb.	93½	89	90½	47½	
Nigerian	1,900	25.2.39	44,933	+ 2,517	48	1,932,194	2,596,151	- 663,957						
Rhodesia	2,442	Jan., 1939	339,253	- 53,949	17	1,511,391	1,710,441	- 199,050						
South Africa	13,285	1.4.39	680,690	+ 60,282	1	680,690	620,408	+ 60,282						
Victoria	4,774	Jan., 1939	782,635	- 110,925	31	5,516,576	5,640,789	- 124,413						

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1%.

† Receipts are calculated @ 1s. 6d. to the rupee; £ x ex dividend.

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the Sterling weekly receipts at the par rate of exchange has proved misleading, the amount being over estimated. The statements are based on the current rates of exchange and not on the par value.